APPRAISAL NOTES
for
THE ASSESSOR

by
ANGUS N. MacKAY

DEPARTMENT OF MUNICIPAL AFFAIRS
ONTARIO

Ontario. Municipal affairs dept.

Appraisal notes for the assessor.

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OFFICE OF THE MINISTER

To the Assessors of Ontario:

On behalf of the Department of Municipal Affairs, I take pleasure in presenting the second edition of *Appraisal Notes for the Assessor.*

These *Notes* have been revised by Mr. A. N. MacKay of my Assessment Branch in light of the experience of Ontario's assessors who have used the original *Notes.*

I feel confident this edition will be a worthwhile text for assessment valuation courses and will be an important addition to the training programmes of the Department.

My grateful thanks are extended to the various committees and individuals whose comments on the first edition proved helpful in the preparation of this version.

Yours very truly,

W. Darcy McKeough,
Minister.

PREFACE

Early in 1966, I was given the opportunity to revise the original *Appraisal Notes for the Assessor*, published by the Department of Municipal Affairs in 1964. What began as a straightforward reorganization and updating of the manual soon developed into a major expansion of the material and eventually into what is, in effect, a new manual. Other than the title, the major similarity between this volume and its predecessor is the emphasis placed upon the use of market data when making valuations.

Readers of the *Appraisal Notes* must bear in mind that it has been written in a transitional period of assessment administration in Ontario. Among other things, it has been a time during which valuation principles and procedures have been re-examined by many of those concerned with assessment. One concrete expression of this concern with basic valuation concepts is the attempt, in the manual, to place each of the valuation methods in its proper perspective. In relative terms, far more attention is devoted to the comparative sales method of valuation than is the case in most procedural manuals. In the same vein, more than the ordinary amount of time is taken up with explaining the theoretical bases of the various valuation principles.

The emphasis in the manual on the theoretical aspects of valuation has not been done at the expense of procedural considerations. Indeed, valuation procedures have been expanded upon from the original *Appraisal Notes*. For the most part the theory has been introduced solely to explain why certain procedures are advocated.

Since this volume had its genesis in the 1964 edition of the *Appraisal Notes*, the acknowledgements made then apply still. At the same time, I must note the advice, assistance and encouragement given me by my colleagues in the Assessment Branch over the past two years. In particular, I would like to thank the Director, Mr. P. G. Gillis, and Mr. E. R. Bailey, Mr. S. F. Huneault, Mr. A. V. Oakes and Mr. J. K. MacTavish. While these gentlemen should feel free to disclaim any responsibility for the final product, their help was

invaluable to me. In addition, I would like to thank Dr. J. F. Chant of Queen's University and Mr. C. W. Yates, Q.C., General Municipal Counsel in the Department of Municipal Affairs, both of whom read various parts of the manuscript, for their comments and suggestions. Finally, I must mention Mrs. Margaret Bullbrook who typed seemingly endless versions of the manuscript.

As with all procedural manuals of this type, there is a distinct possibility of errors in the material that is presented. Furthermore, there is material omitted which some assessors will feel should have been discussed. I wish to absolve all those who assisted me in preparing the manual from responsibility for such failings and to acknowledge responsibility for them myself.

Since the manual is an official publication of the Department of Municipal Affairs, the opinions expressed are not simply those of the author but are interpretations by the author of current Department policy towards the valuation of real property.

Angus N. MacKay
March, 1968

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INTRODUCTION

The valuation of real property is essentially a problem in applied economics. This implies that valuation must be regarded as an inexact science in which theory is expressed in terms of principles rather than absolute laws. Unlike the theories postulated in the pure sciences, which are based on experiments made under controlled conditions, the theories underlying economics do not state with absolute certainty what will occur in a given situation. The essential difference between economics and, for example, physics is the impossibility of obtaining controlled conditions in which economic theories can be tested.

In view of the relative uncertainty associated with economic theory, the principles enunciated in the theory of real property valuation must be applied with discretion. It is imperative that the assessor have a clear understanding of each principle and its possible application in a particular market situation. Such an understanding will come only after considerable study and application.

The principles of valuation theory provide a framework within which the assessor must develop a system of uniform procedures to use in his valuation work. No matter how firmly they are based in theory, principles and procedures are not substitutes for judgment. Similarly judgment, regardless of how soundly it is exercised, will not provide equitable assessment unless it has a solid basis in fact. The importance of adequate data cannot be stressed too much. Principles, procedures and judgment are means to an end, namely, the analysis of market data in a logical manner to ensure that value estimates are based on consistent interpretations of the facts. The three elements in valuation—principles and procedures, judgment and facts—are interdependent. The theories of valuation must be used in conjunction with sound judgment to analyze the available data if assessments are to be made equitably. Conversely, no matter how accurate the assessor's facts and his judgment, equitable assessments cannot be made unless they are derived from a consistent framework based on well-defined principles.

In this manual, the fundamental valuation principles are discussed, various procedures are described and the types of data that should be recorded are indicated. Since no text can set out all the information that might be used profitably by an assessor, the principles and procedures discussed in the manual are not provided as absolute standards to be applied indiscriminately. They are aids for the assessor in exercising his judgment and applying his knowledge. Any assessor who unquestioningly follows this manual without considering circumstances in his own jurisdiction will not be doing a proper job. In this regard, it should be emphasized that the examples in the text are included to illustrate procedures, not to recommend specific rates or allowances.

With these reservations in mind, the purpose of the manual can be stated more specifically. In the first instance it sets out a definition of market value that is appropriate for the valuation of real property. Although this definition is based on previous judicial decisions, it is new to the extent that it places more emphasis on actual market transactions than is the case with other definitions. The major portion of the manual is devoted to a discussion of the three methods of valuation—comparative sales, income capitalization and cost, including depreciation. The analysis of these concepts departs in several respects from traditional valuation theory. These changes have been made in order to make the principles of valuation conform to the definition of market value used in the manual and to keep them consistent with economic theory. In the final sections of the manual demonstration appraisals are set out to show how the theory can be applied to actual valuation problems.

Chapter I

THE BASIS OF ASSESSMENT VALUATIONS

The Ontario Assessment Act, though quite specific in requiring that all assessable real property in the Province be assessed at its actual value, does not define actual value. In order to comply with the statutory requirement for valuations at actual value, the assessor must look elsewhere to find a definition. There are two possible sources—decisions of the various courts, tribunals and other judicial bodies which decide assessment cases and, secondly, economic theory.

Judicial Definitions of Actual Value

In view of the statutory requirement to assess at actual value, it is reasonable that the courts should decide the exact meaning of that term. Unfortunately, the various judicial interpretations are not unanimous in their definitions. However, the *Sun Life* case provides an excellent definition of actual value which has served as a precedent in most assessment cases heard in Ontario since 1950. The following statements by Mr. Justice Taschereau and Mr. Justice Estey summarize the concept of actual value used in the decision handed down in that case.

> "In the case of municipal assessment it is the 'real value' or 'actual value' that has to be considered. . . . The real value is the 'market value' or 'value in exchange' and in order to ascertain it, one must necessarily, even if there has been no sale of the building, try and find what would be the price in the open market."
>
> Sun Life v. City of Montreal, (1950) S.C.R. 220 per Taschereau, J. at 240 and 244-5.
>
> "It" (actual value) "means exchangeable value—the price which the subject will bring when exposed to the test of competition." Lord Advocate v. Earl of Home (1891) 28 Sc. LR 289 per Lord McCallum 283.
>
> cited by
> Estey, J. in Sun Life v. City of Montreal, (1950) S.C.R. 220 at 252.

Value

Economic Concept of Value

On the basis of these judicial definitions it is clear that the assessor is concerned with estimating market value—an economic rather than a philosophic concept. Such being the case, the terms 'market' and 'value' should be explained both in the wider economic sense and, more specifically, in relation to real property. Since value is the more important, as well as the more contentious of these concepts, it will be dealt with first.

In the sense that economists use the term, value is relative rather than absolute, as is illustrated by the following definition which is widely used in economics.

> The value . . . of one thing in terms of another at any place or time, is the amount of the second thing which can be got there and then in exchange for the first.

If one hundredweight of nails exchanges for 50 board feet of lumber, the value of the nails is one hundredweight of nails equals 50 board feet of lumber. Conversely, the value of the lumber is 50 board feet of lumber equals one hundredweight of nails. If conditions change so that one hundredweight of nails exchanges for 100 board feet of lumber, the value of nails will be twice as great. Another way to describe the change is to say that the value of lumber fell by 50 percent. Thus the value of a commodity may be regarded as the ratio at which it is exchanged for another commodity.

In order that a commodity can be regarded as valuable, two conditions must be present:

(i) Individuals must derive some advantage from the commodity and wish to obtain this advantage, generally by owning the commodity;

(ii) The commodity must be relatively scarce. That is, the amount of the commodity available must be limited in relation to the total of competing demands for it so that individuals must do without if they are unwilling or unable to purchase it or its services.

Before any commodity can have value some individual must feel an advantage can be derived from the ownership of it or of its services. The term 'advantage' is somewhat nebulous but is inter-

preted here to mean any pleasure, satisfaction or benefit produced by the commodity. With the aid of some imagination, an advantage can be derived from the ownership of almost anything, but under ordinary circumstances polluted water, for example, has no value because no advantage is obtained from owning it.

The ability to produce some advantage is not enough to make a commodity valuable. There must be a demand for its services. Commodities that were valuable in the past and might still be capable of providing services become worthless, except perhaps to collectors, as they are replaced by more efficient substitutes. Solid rubber tires, for example, lost their value as they gave way to cheaper and more comfortable pneumatic tires. Similarly, while it would be possible to translate the Assessment Act into Spanish for Latin American assessors, no such translation has been made as demand for it is insufficient. If no individual is willing to give up resources to purchase a commodity, then, in an economic sense, it has no value. Any commodity, regardless of the advantages it may provide, lacks value if there is no effective demand for it.

Conditions of supply also affect value. The air we breathe is extremely useful; we all desire it and would be willing to pay for it if it were not available. But air exists in quantities more than sufficient to meet all competing demands for it. Individuals need not take any time, expend any effort or use up any resources when obtaining its services. That is, there are no costs involved in its production. Furthermore, the large quantity of air available precludes the necessity for rationing air among competing users. As a result we need pay nothing for air; in economic terms it has no value and is said to be a 'free good'.

Scarcity as it influences conditions of supply must not be confused with the effects of scarcity on the demand for a commodity. In general the major influence of scarcity on value is felt through supply, i.e. the limitation of the quantity of commodity in relation to the total of competing demands. However, possession of a commodity known to be unique, or the supply of which cannot be increased may, regardless of its other characteristics, provide individuals who own it with a great deal of satisfaction. For example, many rare postage stamps and coins command high values simply because they are rare.

Thus the essential conditions necessary for a commodity to have value are:

(i) Individuals see some advantage in owning it or otherwise making use of its services;
(ii) It exists in limited quantities relative to the total demands for it or its services.

VALUE AND PRICE

The economist's concept of value, which measures value in terms of the rate at which one commodity exchanges for another, is not appropriate for assessors. They require a measure of value that is made in terms of a common standard. Economists have encountered the same difficulty with the concept of value and have adopted money as the common standard by which value can be measured. This measure of value can be expressed by the price, in terms of money, that a commodity commands in the market place.

In view of the use of money as a medium of exchange, there is another definition of value that might be used.

> The value of a commodity is the price, in terms of a medium of exchange, that commodity is able to command in the market place.

To use our example of nails and lumber once again—if one hundredweight of nails commands a price of $8, the value of the nails is $8 per hundredweight. Similarly, if 50 board feet of lumber also sell for $8, then the value of the lumber is $8 per 50 board feet. Changed conditions might lead to a new price for nails, for lumber or for both. Suppose, for example, that one of the following happened:

(i) Nails rise to $16 per hundredweight;
(ii) Lumber falls to $4 per 50 board feet;
(iii) The prices of both nails and lumber rise, with the rise in the price of nails twice that of the price of lumber;
(iv) The prices of both nails and lumber fall, with the fall in the price of lumber twice that of the price of nails.

The final result is the same in terms of dollars—after the change in price a hundredweight of nails is twice as valuable as 50 board feet of lumber.

For our purposes, price can be defined as follows:

> Price is the revenue, generally expressed in terms of money, that the owner of a commodity receives from the sale of one unit of the commodity.

In other words, price is the amount of money that expresses the value in exchange of a commodity. *Economists regard price as the best measure of value.* Since it is more concrete and more easily ascertained than value, it can be more readily adapted to economic analysis.

Real Property Value

The attributes of real property that give rise to value and allow it to command a price in the market are the same as those for any commodity, i.e. it provides some advantages (satisfaction, pleasure or benefit) to individuals and it exists in limited quantities. Only the first of these characteristics of real property will be discussed here as the other is sufficiently obvious that it needs no elaboration.

To say that real property provides some advantages to individuals means that it is productive. This productivity is derived from the ability of real property to provide three basic services to man:

(i) Shelter;
(ii) Accommodation for various economic activities;
(iii) Access to other activities.

Not only do individuals desire the services provided by real property, but the supply of real property is limited relative to the competing desires for it. In order to obtain real property, people must be able to bid it away from its alternative uses. Indeed it is necessary to pay for these services before they are provided. Furthermore, land in its natural state is generally of little or no use to individuals. The costs that must be incurred to convert land from its natural condition to a productive use generally establish a minimum value for land.

The services associated with real property are provided by the entire property and cannot be allocated between land and building. Whereas a building provides shelter and accommodation, land provides the support for the improvements and the location of the site provides access. An individual owns property because he wants all of these services. If he makes an offer to purchase, he values them as a unit, not separately.[1] Thus the price an individual offers for a

[1]This statement does not preclude the possibility of making an allocation of value between land and building after the value of the property has been estimated. Under no circumstances, however, can the sum of the portions differ from the value of the whole.

property is related to the value he places on the services he will receive from it. The price actually paid in a transaction may equal this value or it may be less. It will never be more.

Although the services that can be provided by a property in a particular use do not depend on ownership, different individuals will not necessarily offer the same price for that property. This apparent anomaly can be explained as follows:

(i) The value that different people place on the services of the property may vary;
(ii) Individuals differ in their anticipations of the future. This influences the manner in which they convert future services into an offer price;
(iii) The relative bargaining positions of buyer and seller and the alternatives open to them influence the intensity with which the services are desired.

It should be apparent that the value of real property is not intrinsic, but rather results from the effects of a number of forces that influence the productivity of the property and affect the anticipations of prospective owners. These are grouped under the general heading of market forces. The manner in which these forces operate and prices are determined depends in large part on the nature of the market in which they act.

Market

To an economist, a market has two possible meanings. It may be an organization, not necessarily formally established, where prospective buyers and sellers are in contact to exchange commodities. Alternatively, an economist may regard a market as the area over which this organization extends or where its influence is predominant. We are concerned here with the first meaning.

Markets for various commodities have evolved over time and their development has been influenced by the nature of the commodity being traded. Nevertheless, there are certain criteria by which the differences and similarities among various markets can be evaluated. The more important of these are:

(i) The number of buyers and sellers;
(ii) The nature of the commodity being traded;
(iii) The degree of contact between buyers and sellers;
(iv) The information available to the buyers and sellers about the commodity and about substitutes for it;
(v) The freedom of entry into, or exit from, the market.

In an attempt to illustrate the characteristics of any market more clearly, economists have developed the concept of a perfect market. A perfectly competitive market, when defined in terms of these criteria, must meet the following set of conditions:

(i) There is a sufficiently large number of buyers and sellers to ensure that an individual transaction does not influence the price or otherwise affect the conditions under which other transactions are made. Each dealer (buyer or seller) in the market must accept the market price as he finds it;

(ii) The commodities traded by each dealer are identical or sufficiently standardized that a consumer obtains the same benefits from the commodity regardless of where he purchases it;

(iii) There is sufficiently close contact between buyers and sellers that any changes in price are immediately communicated among all dealers in the market. Each dealer can buy or sell in large or small amounts at a uniform price;

(iv) Each dealer is aware of any and all information pertaining to the commodity and of any substitute products. This condition ensures that prices change quickly in response to any changes in supply or demand;

(v) There are no restrictions on the entry into, or exit from, the market. This condition ensures that if excess profits or losses result from changed market conditions, they will be rapidly removed by changes in the number of dealers.

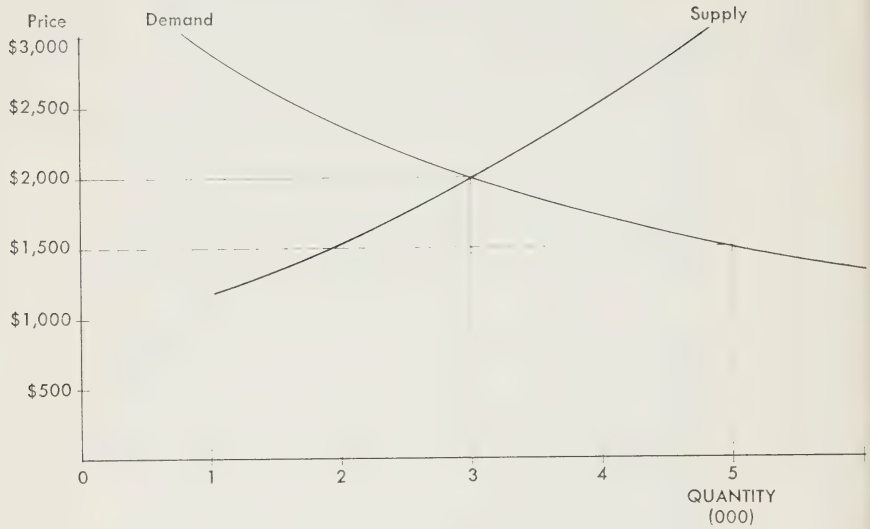
In its pure state, a perfectly competitive market is non-existent; however, the markets for certain agricultural products and for personal services may approach the hypothetical perfectly competitive market.

Commodity Market

The following description of the automobile market is included to illustrate in an elementary fashion how an actual commodity market operates.

The diagram shows a hypothetical situation in the automobile market. It is apparent from the demand curve that at a high price quantity demanded is low but increases as the price decreases. The supply curve shows that as price increases more suppliers will be attracted to the market. The shapes and the positions of the supply and demand curves show the existing market conditions. These conditions are the result of factors that need not be discussed. They include the number of producers, the number of plants, the capacity of the plants and the desires of individuals for automobiles. It is assumed that these conditions do not change.

FIGURE 1
THE AUTOMOBILE MARKET



Suppose a new model is put on sale at $1,500. At that price the manufacturers are willing to sell 2,000 automobiles, but consumers are willing to buy 5,000. The disappointed purchasers are willing to pay more than $1,500 and they proceed to bid up the price. As the price rises the manufacturers produce more cars. The higher price will also lower the number of individuals who wish to purchase automobiles. Eventually a position will be reached where the consumers are willing to buy exactly the number of automobiles the manufacturers produce.

Under the existing conditions this equilibrium price is $2,000 and the equilibrium output is 3,000 cars. Equilibrium is reached at a particular price when potential buyers are willing to buy exactly the amount of the commodity the sellers offer for sale. So long as conditions do not change that equilibrium position will remain at $2,000 and 3,000 cars. The reader can determine for himself what would happen if the original price were $2,500 rather than $1,500.

The market mechanism applies to the production, as well as the sale, of commodities. There cannot be production of goods and services without using labour, machinery and materials and land. In economic terms, these factors of production are classified as

labour, capital and land. They are influenced in the same way, and by the same conditions, as other commodities in the market. Land is attracted to a particular use by the opportunity for increased rent, labour by the prospect of higher wages, and capital by the possibility of earning greater interest. At the same time, a higher level of rent, wages or interest will tend to reduce the quantities of land, labour or capital that producers will want to use in making final output. Equilibrium is reached between buyers and sellers of the various production inputs in the same manner as it is in commodity markets, that is, when the price of the input is such that the amount offered just equals the amount demanded.

Thus the concept of a market in which price is determined by the demand for the commodity, or factor of production, in relation to its available supply is basic to all aspects of economics. Through prices and price changes the markets of a competitive company carry out three essential functions:[2]

(i) They determine *what* commodities shall be produced;
(ii) They determine *for whom* these commodities shall be produced;
(iii) They determine *how* the factors of production shall be combined to produce each commodity.

The Real Property Market

Few real world markets operate as smoothly as that depicted in the previous sample. In particular, the market for real property operates much less efficiently than the automobile market illustration might suggest. The characteristics of the real property market differ significantly from those of the perfectly competitive market in several important respects:

(i) Except for real estate brokers, some financial institutions and large scale developers, there are few regular dealers in the market. Generally, there are more prospective buyers than sellers, thereby permitting sellers to discriminate on the basis of price. This is particularly true for newly developed properties;
(ii) Every commodity traded in the market is unique. Differences in location are accentuated by differences in architecture, size, style, etc.;
(iii) There is inadequate information available on which comparisons of property and analysis of market conditions can be made. This lack of information results from:

[2]Samuelson, P. A., and Scott, A., *Economics*, Canadian Edition, McGraw Hill, 1966, p. 40.

—the unique location of each property,
—the durable nature of property improvements,
—the lack of contact between buyers and sellers,
—the inexperience of most market participants,
—the infrequency with which transactions occur;

(iv) Since initial costs are so high, it is difficult for new developers to enter the market. Consequently, in periods of excess demand, developers and other sellers in the market may earn abnormal profits over an extended period of time;

(v) The lengthy process involved in making property available for sale leads to sluggish changes in supply in response to changes in demand. The opportunity for abnormal profits among sellers is thereby accentuated;

(vi) The high cost of real property in relation to other commodities, and the consequent mortgage arrangements made to finance a purchase over a period of time, complicate market operations. This means that a prospective buyer must concern himself with the state of the mortgage market as well as the real estate market when making a purchase;

(vii) In most markets a number of dealers, who are interested in changes in price rather than the services of the commodity, will act as speculators. The other imperfections in the market make speculation in real estate a profitable operation. As a result, it is sometimes difficult to determine whether particular sale prices reflect the productivity of properties or merely the expectations of speculators that prices will change in the future.

Market Value in an Imperfectly Competitive Market

An economist uses the term 'market value' synonymously with 'market price'. If the market under consideration is perfectly competitive, market price will be identical with sale price. However, if it is imperfectly competitive—as is the real property market—sale price may not be identical with market price and thus may differ from market value. In imperfectly competitive markets a transaction may reflect what a typical investor will pay for a commodity; however, there is no necessity that it should. Each transaction must be examined to determine whether the sale price reflects the anticipations and forecasts of the typical investor. In the event that it does meet these conditions, the sale price should be accepted as a measure of market value. If it does not reflect the typical transaction, the sale price must be rejected as a measure of market value. It is, of course, possible to make adjustments to the sale price so that it does reflect market value, provided the adjustments reflect the actual market conditions.

The Basis of Assessment Valuations

A valuation made for assessment purposes should reflect the judicial definitions of actual value, the characteristics of the real estate market and the concept of value used by economists.

It is apparent from the judicial definitions of actual value that the assessor must estimate market value when making his valuation. The definition is based on the assumption that the market observed is an open market, that is, one in which the competitive forces are operating. A further assumption is that the assessor's valuations are objective—at least to the extent that objectivity is possible in a market where relevant data may be sparse. In other words, the assessor's valuation should reflect what the typical investor would pay for a property.

The need for objectivity in valuations makes it imperative that assessments be made in the context of current market conditions. Thus the assessor must have a complete understanding of the market in his jurisdiction. Since the real property market is imperfectly competitive, valuations based on current market behaviour will, and should, reflect imperfectly competitive conditions. An assessor who attempts to make his assessments in the context of a perfectly competitive market reduces the objectivity of the valuation by making inordinate use of his personal opinion. The injection of biases into the valuation when such attempts are made is inevitable, as it is impossible to secure a consensus as to what will happen in a market situation that does not exist.

To an economist the best measure of market value, regardless of whether the market is perfectly or imperfectly competitive, is the price at which a sale occurs. Under perfectly competitive conditions such a price is accepted as the only measure of market value. When market conditions are imperfectly competitive, the relationship between market value and price is not so direct but the price at which a sale occurs is the best evidence of market value. The conditions surrounding the sale must be examined to determine if the sale reflects the behaviour of the typical investor in the current market situation. Only if the sale price satisfies these criteria will it be accepted as a measure of market value.

In view of the judicial definition of actual value as market value, of the imperfectly competitive conditions that characterize the real

property market and of the economist's concept of market value suitable for an imperfectly competitive market, it is possible to define market value in a way that is appropriate for assessment valuations.

The market value of a property is the price at which a sale is most likely to occur.[3]

This definition of market value is recommended for use by all assessors in Ontario. It provides the basis for the analysis of valuation methods in this volume.

The definition of market value presumes there is, in fact, a market in which properties of a particular type or use are actively bought and sold. There will, of course, be instances when an assessor is expected to value properties for which there is no market. In such circumstances the assessor must estimate a value that, in his judgment, would be the market value if a market did exist.

In its decision dealing with the *Sun Life* case, the Judicial Committee of the Privy Council considered this point.

> ". . . where, as here, there is no actual market for the building, the assessor must endeavour to arrive objectively at a supposed exchange or competitive market value."[4]

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[3]This definition owes much to the analysis of real estate valuation in R. U. Ratcliff's *Modern Real Estate Valuation*, The Democrat Press, Madison, Wisconsin. In his analysis Ratcliff defines market value as "most probable selling price."

[4]Montreal v. Sun Life Assurance Co. of Canada (1952) 2 D.L.R. at 81.

Chapter II

THE VALUATION PROGRAMME

> "Actual value must be . . . a matter of judgement exercised after determining every item that affects the value of the particular immovable under consideration."
> The Bishop of Victoria v. City of Victoria, (1933) 4 D.L.R. 524.
> cited by
> Estey, J. in Sun Life v. City of Montreal, (1950) S.C.R. 220 at 252.

The valuation programme, whether it is undertaken by an assessor or an appraiser, is largely determined by the method of valuation employed. Often referred to as the appraisal process, a valuation programme involves the systematic and logical collection of data, the analysis and interpretation of those data and the estimation of market value. Since assessors must make valuations for a large number of properties in a limited period of time, they are forced to compromise, to some extent, between using refined valuation methods and completing the assessment roll in the prescribed period. Such a compromise need not, and should not, lead to an inferior valuation. Indeed, a mass valuation programme has an important advantage over an individual valuation prepared by an appraiser as it provides the assessor with more extensive market data than any individual appraiser can possibly collect.

In a mass valuation programme such as that undertaken by an assessor, a preliminary survey should be made to obtain a general familiarity with the area and to determine the order in which the work will be done. While the survey is being made a procedure for data collection should be established. Much of the data, such as those provided from the Registry and Land Titles Office, the Municipal Building Inspector and the local sales recording service, can be collected and posted to appraisal cards by clerical staff. The rest of the data, which are provided by interviews and inspections of the properties, should be gathered and recorded by the 'field' assessors.

An estimate of market value is a prediction, made in the light

of what has already happened, of the likely current sale price of a property. In order to estimate market value the assessor must gather historical data which will provide him with a basis for predictive purposes. It is the responsibility of the assessor to analyze or interpret these data in such a manner that he can predict the market value of each property in his jurisdiction. He should keep the following points in mind when selecting the data that will be useful to him:

(i) The value of a property is not intrinsic; it is determined by the anticipations and decisions of individuals dealing in the real property market;

(ii) The value of a property is a function of:
—the value of the services derived from the property;
—the expectations of individuals and the manner in which they value the services derived from real property;
—conditions in the market, for example, the relative scarcity of acceptable substitutes and the level of demand;

(iii) The indicators of market value are:
—the sales of the property or of properties comparable to it;
—the capitalized value of the income produced by the property;
—the cost of providing a comparable property.

There are three broad classifications of data that are needed by the assessor in order to analyze activity in the real property market.

(i) *Sales*—The sale of a property is a direct estimate of the value that the market places on the property. The sale price, which reflects the supply of, and demand for, the property at a given point in time, is a measure of the value of the benefits that can be derived from the property. That is, sale price is a measure of the productivity of the property under given market conditions;

(ii) *Income*—The money produced by a property reflects the price that the market places on the annual value of the benefits derived from it. The income, when properly capitalized, provides an estimate of the value of the property;

(iii) *Cost*—The cost of production of a property is not directly influenced by the supply of, and demand for, benefits derived from the property. It provides a useful indication of market value since the market values of new properties will seldom be less than their costs of production. On the other hand, cost of acquisition provides an estimate of the maximum amount an investor will pay to obtain a new property that produces benefits of a given value.

There are three methods of valuation, each of which can be recognized by the data on which it is based:

(i) The *comparative sales method* is the most realistic of all valuation methods. The larger the number of sales of similar properties that occur, the more useful this method becomes;
(ii) The *income capitalization method* is excellent for valuing properties that produce a money income to the owner;
(iii) The *replacement cost less depreciation method* can be applied to all types of buildings. The major weakness of this approach is that it does not measure property value directly.

Data from each of these methods should be gathered and recorded separately so that, whenever necessary, the value estimates produced by them can be checked against one another and the final value estimates of market value substantiated. The analysis of the data should not be completed until all the available information has been accumulated. Certainly, conclusions should not be drawn until all the data have been assembled and examined.

The value estimates produced by the three methods of valuation will not coincide exactly even though they are estimates of the same thing—market value. Essentially, discrepancies will arise because there are imperfections in the market. If the economy were perfectly competitive, the estimates produced by all three methods would be identical.

Inadequate data, which may even preclude the use of one or two of the methods, is another reason for discrepancies in the various estimates. Whatever the reason, the estimates from each method should not be averaged arithmetically to produce a final estimate of market value. To be valid, the estimates of market value can be substantiated only if the estimates from each method are compared and weighted according to the adequacy of the information available.

The valuation programme thus consists of five steps, each of which is a separate and distinct function:

(i) Make a preliminary survey of the properties;
(ii) Record all available data;
(iii) Analyze the data to obtain value estimates;
(iv) Substantiate the value estimates;
(v) Make final estimates of value for each property.

Chapter III

COMPARATIVE SALES METHOD OF VALUATION

> "The various factors" (required to be considered in estimating value) "mentioned are merely such as would be taken into consideration by a prudent buyer or seller. Such being the case, a record of sales is considered the measure of actual value as the buyers, presumably after due consideration of all factors, are willing to back their judgement to the extent of paying out their money." City of Owen Sound and Lorne J. Boyle, 1949, 44 A.R./O.M.B. 124, 125.

The analysis of sales of comparable properties is the most objective means of estimating market value since it requires the fewest adjustments to market data. The most direct evidence of the market value of a property is the price at which it sells in a transaction. Equally important, sale prices can be used to estimate the market value of comparable properties which have not been involved in transactions.

Obviously, the most critical aspect of the comparative sales method of valuation is the question of what constitutes comparability. This problem resolves itself into three parts: comparability of properties, comparability of transactions and comparability of market conditions. Each of these aspects must be carefully analyzed before the comparative sales method can be used with any degree of confidence.

Comparability of Properties

A meaningful analysis of property sales is contingent upon the assessor's classifying the properties so that like is compared with like. No two properties are identical, if for no other reason than that each occupies a unique position on the earth's surface. Despite this locational consideration, a large proportion of properties have common characteristics and may be regarded as comparable for purposes of sales analysis. The characteristics which are, in fact, significant in any municipality are determined by the actions of buyers and sellers in the market. Some factors, such as the use and the location of the

property, are always relevant; the importance of others will vary in response to conditions in the market and to changes in these conditions. It is the assessor's responsibility to determine the significant factors in his jurisdiction.

For example, in periods of strong demand when there is a 'seller's market', potential purchasers may not be as discriminating as they would be in periods of excess supply. Whereas a suburban home without a finished recreation room might sell for almost the same amount as one with a recreation room when the level of demand is high, a potential buyer for such a home would expect a discount if there were an excess of suburban homes on the market.

The criteria for establishing comparability of properties discussed in this section are: use of the property, characteristics of the neighbourhood in which the property is situated, location of the property, site or, in the case of rural properties, soil conditions of the property, and buildings on the site. These factors have been significant in the past; whether they are still significant in particular markets, whether there are other considerations, and whether those that are relevant now will remain so, are questions each assessor must answer for his own jurisdiction.

Use

The most obvious property characteristic for purposes of comparison is its present use. Classification according to use is essential because the motives of buyers and sellers of residential properties are different from those of investors in commercial, industrial and rural properties. Similarly, the considerations which influence investors in each of these other types of property differ according to actual or prospective use. Within each of these broad classifications it may be necessary to segregate various sub-classifications, such as single family detached, row or multi-family housing within the general category of residential. Additional reasons for classification according to use will become evident as the other criteria of comparability are noted.

Neighbourhood

The purpose of this section is to list those factors which an assessor can use to identify the various neighbourhoods in his municipality. It is not expected that he should prepare a neighbourhood

study for every property he includes in a sales comparison analysis. However, if the neighbourhoods have been identified and their characteristics noted, the assessor can compare properties from several similar neighbourhoods and be more confident that his comparisons are valid.

A neighbourhood is a district of a municipality that serves a particular purpose. The type and size of a neighbourhood are largely determined by its location in relation to other districts in the municipality. The majority of properties in a neighbourhood are subject to the same economic forces and most property values rise or fall together. Any neighbourhood—whether residential, commercial, industrial or rural—can be analyzed on the basis of three factors:

(i) Physical environment;
(ii) Government regulations;
(iii) Personal characteristics of the owners and residents.

Physical environment: The physical environment of a neighbourhood is the result of both natural conditions and human activity. The natural conditions most significant for neighbourhood development in urban areas are topography and load-bearing qualities of the soil; in rural areas, topography and soil fertility are most relevant.

Topography, often the determinant of neighbourhood boundaries, can serve as either a stimulus or deterrent to development within a particular geographic area. Extremely rough terrain or inadequate load-bearing qualities of the soil may lead to such high costs of construction that any kind of development is precluded. Areas of fertile soil are generally developed for agricultural purposes ahead of those where the soil is less productive.

The effect of topography on neighbourhood growth depends on the predominant use of the area. Residential development is attracted to areas of gently rolling or even rough terrain in order to cut down on monotony and to take advantage of the scenic qualities; commercial and industrial development tends to locate on flat land where servicing and construction costs are lower; agricultural development will locate on flat or gently rolling land where crop cultivation is less expensive.

Human activity exerts a most important influence on the physical environment of a neighbourhood. The location of the neighbourhood

in relation to the business, social and other forms of activity throughout the municipality is one of the most significant characteristics. Development is encouraged in those neighbourhoods where the predominant land use is similar and/or compatible with that in contiguous districts; conversely, it may be discouraged if it is not compatible or is competitive. The accessibility of the neighbourhood to related types of development, for example the distance from a residential neighbourhood to shopping districts, will affect development. The influence of human activity is also reflected by: the type and architectural style of buildings; the type of secondary, or service, development; the adequacy of public facilities and the degree to which nuisances as well as health and safety hazards are present. All of these have significant effects on the rate of neighbourhood growth and the type of growth that will occur.

The term 'business characteristics' refers to those factors that affect the level of economic activity in the neighbourhood and thus the development of the neighbourhood. They have less relevance for residential districts than for commercial, industrial and agricultural areas. Business characteristics include the productive capacity of the various enterprises in the neighbourhood, the level of demand for the output of the enterprises, the amount of competition for the enterprises and their ability to withstand competition. Generally speaking, it is not essential for an assessor to prepare comprehensive market analyses of the enterprises in a neighbourhood. However, he should understand business characteristics well enough that he can anticipate trends of growth or decline and account for them in his valuations when they are reflected in sales and rents.

Government regulations and taxes: Municipal government is the most interested and most active of all levels of government in encouraging efficient development of neighbourhoods. In order to implement their development policies, municipal councils enact legislation such as zoning and sanitary regulations, planning by-laws, subdivision controls and building and fire prevention codes. If this legislation is carefully prepared, and efficiently administered, and reflects economic and environmental conditions as these are interpreted by residents and investors in the neighbourhood, development in that neighbourhood will be encouraged. On the other hand, if the legislation is poorly

drafted or administered, or if it ignores underlying conditions, development can be seriously hindered.

The burden of municipal taxes can have important effects on neighbourhood development. The concept of tax burden includes more than the absolute level of taxes per property; it takes into consideration the ratio of tax payments to the amount of municipal expenditures on services and other benefits for each ratepayer. In those neighbourhoods where the ratio is high—a level of tax equal to or greater than the level of expenditure—or where the ratepayers and potential investors believe it to be high, development may be retarded. Where the ratio is lower or where the level of taxes is below that of expenditures, development is encouraged.

Personal characteristics of the residents: These considerations are essentially subjective as they relate to human attitudes, outlooks and prospects. Whenever an assessor is analyzing personal characteristics, he must attempt to interpret the feelings of the residents without letting his own emotions intrude. Historically, neighbourhoods in which the population is homogeneous and relatively young attract new investment and development more rapidly than similar neighbourhoods where the average age of the residents is higher, or where the population is mixed in some way—perhaps racially, according to religious persuasion or on the basis of income levels.

The attitudes of the neighbourhood residents—toward law and order, toward maintaining their property, toward the future of the neighbourhood, as well as toward their neighbours—can have important influence on neighbourhood development. These attitudes are not usually reflected directly in sales but they do impress would-be investors and in that way influence development.

Location of the Property

The importance of the various locational characteristics of a property is largely influenced by the use of the property, but there are three factors that apply in one degree or another to all land uses:

(i) Compatibility with the predominant land use in the neighbourhood;

(ii) Access to transportation facilities;

(iii) Quantity and quality of municipal services.

A property used for a purpose incompatible with the predominant use in a neighbourhood will generally have a lower value than a similar property in another neighbourhood where the use is compatible. Such properties will also have an adverse effect on the value of adjoining properties in the neighbourhood because of the nuisances and hazards they create. There are exceptions to this general statement. For example, retail or drug stores in a residential neighbourhood may benefit from a monopoly position and cause little in the way of nuisances or hazards to neighbouring properties.

Access to transportation facilities is always an important influence on property values although the types of facilities that are important vary according to the use of the property.

Similarly, while every property requires at least a minimum level of municipal services, use will determine the services required as well as what constitutes a minimum level.

Residential: The locational characteristics that affect the value of residential properties are largely the result of personal tastes—much more so than is the case for commercial or industrial properties. In general, an individual tries to select a home in a location which minimizes his inconveniences, or more optimistically, maximizes his satisfactions. Since the tastes of individuals as to what is inconvenient and what provides satisfaction vary widely, the choices of satisfactory locations also differ considerably. This is not to say that the locational advantages of a residential parcel cannot be identified. They can, and among the more important of them are:

(i) Access to major sources of employment;
(ii) Access to major shopping and service areas;
(iii) Access to neighbourhood shopping and service stores;
(iv) Access to schools and churches;
(v) Access to parks and recreational areas;
(vi) Distance from sources of safety and health hazards, and from nuisances such as noise and smoke.

Commercial: The locational requirements of individuals operating commercial enterprises are related to business considerations; more specifically, they attempt to choose locations that maximize their profits. The considerations which influence their locational decisions include:

(i) Proximity to prime shopping areas;
(ii) Proximity to areas of heaviest pedestrian traffic;

(iii) Proximity to major competitors
  (a) within the neighbourhood,
  (b) in other neighbourhoods;
(iv) Proximity to parking facilities;
(v) Access to residential areas which supply their work force as well as the customers for their products.

Industrial: The locational decisions of industrialists are also influenced by their efforts to maximize profits. The various criteria which interest them include:

(i) Proximity to sources of labour;
(ii) Proximity to market areas;
(iii) Proximity to sources of raw materials and power;
(iv) Access to transportation facilities for the distribution of their product, and for the convenience of their employees;
(v) Access to adequate parking facilities.

Rural: Two aspects of location affect the value of rural properties. First, soil conditions vary from one district to another; these conditions can be determined from soil and topographic maps as well as through soils analyses. The second important aspect of location is concerned with the proximity of a particular farm to:

(i) Product markets;
(ii) Farm supply centres;
(iii) Schools, shopping areas, religious and recreational facilities.

Locational factors are, for the most part, less tangible than other factors and their influence on value varies from one area to another. Assessors should attempt to incorporate accessibility, i.e. locational factors into their classification systems; the quality of available data will determine whether this can be done as easily as for factors such as use, site and building.

Site and Soil Conditions

With regard to urban land the most important site consideration is its suitability for its present use and its adaptability to some other use. The factors that must be examined when analyzing this question are:

(i) Terrain, or topography of the site;
(ii) Load-bearing qualities of the soil;
(iii) Shape and dimensions;
(iv) Landscaping (more important for residential properties);

(v) Street frontage (more important for commercial properties);
(vi) Size or area (more important for industrial properties);
(vii) Homogeneity with other sites in the neighbourhood.

The general meaning of all these factors, with the exception of homogeneity, is fairly clear and will be discussed in connection with various property uses. However, homogeneity of site does require some explanation, which can best be done by an example. A commercial property with a narrow street frontage will be at a greater disadvantage in a neighbourhood where the other parcels have wider frontages than it will in one where the typical frontages are narrower. Similarly, although a rough or rocky residential lot will suffer in comparison to other lots in a subdivision where the average lot is more level and free of rocks, it may suffer no relative loss in value if the typical lot is also rough. Once the assessor has determined the characteristics of the typical site in a neighbourhood he will be able to better interpret sale prices which reflect unusual features of a site and to make more valid adjustments for these differences.

There are three further aspects of site that are relevant for all urban uses:

(i) Topography—rough terrain may increase building costs;
(ii) Load-bearing qualities of the soil—where these are poor, construction costs are increased and, in some instances, development of the site may be precluded;
(iii) Quality of municipal services—the value of properties lacking any of the usual ground services may be discounted by prospective purchasers.

Residential: There are two site features, other than those already noted, which may influence the value of residential properties:

(i) Shape—has less importance for residential land than for other land uses but extremely narrow lots may be discounted in the market as may any unusually shaped lot which is difficult to service or to develop;
(ii) Manner in which it is developed—a lot which is over-improved or under-improved will generally be discounted in the market as will one where development is not in accord with zoning rgulations. A site which is well cared for and properly landscaped may receive a premium in the market;

Commercial: There are three site requirements particularly important for commercial properties:

(i) Shape—the most important consideration is that the enterprise have sufficient street frontage to display products. For

this reason corner lots generally command a premium on the market;

(ii) Presence of an alley or back lane—a lot with a back lane leads to more efficient shipping and receiving of goods; consequently such a lot generally commands a premium;

(iii) Zoning or other regulations for development—value is enhanced if these are well prepared and efficiently administered. For example, they may restrict encroachment of competing or undesirable uses.

Industrial: The physical characteristics as well as the size of the site are the most important non-locational site requirements for industrial land. They are significant because the value of industrial land depends in part on the types of activity to which it can be adapted. Since a great deal of industry is highly specialized, it is more difficult to generalize about the site requirements of industrial land than any other land use.

There are two requirements, common to all forms of industry, which should be noted:

(i) Shape and size of lot—access to transportation facilities and sufficient area for expansion and employees' parking needs will command a higher price in the market;

(ii) Zoning or other regulations over development which may limit the use of the property;

Rural: The value of rural property is a function of agricultural productivity. The most important element in determining productivity is the condition of the soil; thus one of the most important requirements for valuing rural properties is a classification of soil characteristics. Sales analyses of rural properties must incorporate comparisons on the basis of soil characteristics. A soil classification system for agricultural land is set out in Appendix A. It is based on four principal criteria:

(i) Climate—determines the length of the growing season and thus is a major influence on what crops can be grown. Climate can be regarded as a constant for most of Southern Ontario; it is a serious constraint on agriculture in Northern Ontario;

(ii) Soil texture—refers to the relative amounts of sand, silt and clay in the soil. It is a major influence on the type of crops that can be grown as well as on crop yield. Texture varies considerably across Ontario;

(iii) Topography—the major considerations here are drainage and susceptibility of the fields to erosion and/or flooding. Adverse topography can be compensated for by means of irrigation and terracing;

(iv) Drainage—refers to the circulation of water and air in the soil. Inadequate drainage can be compensated for by irrigation.

Soils that are well endowed with any or all of these characteristics will, in general, command higher prices than similarly located but less productive land.

Buildings

The major influence on the market value of improved urban properties is the building on the site. With the exception of properties purchased for immediate redevelopment, this condition holds for all uses regardless of location. In the case of redevelopment the purchaser is not interested in the type or condition of the improvements except as they influence demolition costs. Bearing this qualification in mind, it is clear that any analysis of properties for sales comparison purposes must include comparisons based on buildings. The classification system incorporated in the *Handbook of Cost Factors,* published by the Department of Municipal Affairs, is the recommended method of classifying buildings for comparison purposes.

The classification system in the *Handbook* is based on five criteria for comparing buildings. This system has an important advantage in that it enables the assessor to identify easily those features of a building that are most relevant in influencing market values. These criteria, which are described in more detail in Appendix B and in the *Handbook* are:

(i) Design type—the design type factor indicates the use for which the building was *originally* designed, i.e., residential, commercial, industrial, agricultural, or institutional. These classes may be subdivided into such categories as single family residential, multi-family residential, store, garage or office building;

(ii) Character of construction—this factor identifies the type of framing (supporting columns and beams), walls, floors, roof structure and fireproofing. Any building will fall into one of four categories or classes depending on its type of construction.

Class "A" designates the most durable and fire-resistant type of construction and thus the most expensive to build. The other classes are decreasingly durable and increasingly combustible.

Class "D" is the least durable, the most combustible while, at the same time, the least expensive to build. Most houses are either Class "D" or class "C". Class "A" and Class "B" buildings are generally office or institutional buildings;

(iii) Quality of construction—the quality factor examines each type of construction, as determined by the character of construction, in more detail. There are ten quality classes for each type of construction, ranging from class 10, which is built of the highest quality of special features and refinements, to class 1 which includes inexpensive cabins and summer cottages;

(iv) Shape—the shape factor recognizes that the shape of a building influences the cost of construction per square foot of floor area. The least expensive building is a square structure since it requires fewest lineal feet of perimeter wall per square foot of floor area. There are four shape factors in the classification system;

(v) Size—the size factor recognizes the inverse relationship between size and cost per square foot of floor area. That is, the smallest building in any particular class will have the highest construction cost per square foot of floor area. The reason for this relationship is two-fold:

(a) the cost of basic utilities needed for a class of building is largely independent of size;

(b) a unit increase in floor area requires less than a unit increase in perimeter wall, e.g., an increase in floor area of four times, from 400 square feet to 1,600 square feet requires only twice as much perimeter wall, from 80 feet to 160 feet.

The most significant aspect of the classification system is that it incorporates building construction costs into the analysis of comparative sales. Without these costs only buildings similar to those that have been sold can be included in a comparative sales analysis. However, by using the classification system and the rates in the *Handbook*, buildings unlike those that have been sold can be compared and an estimate of their market value made. The costs in the *Handbook* do not provide an estimate of the replacement cost new of a building; they are included in the *Handbook* because construction costs provide a 'common denominator' for all buildings—they provide a base for estimating the market value of the building.

The rates in the *Handbook* are based on construction costs in Metropolitan Toronto and show the cost of construction—not the market value—of a particular class of building, say a D-6-A house, in Toronto in the base period. When an assessor anywhere in the province classifies a D-6-A house and applies the appropriate rates to it, he shows only what it would have cost to construct it in Toronto in the base period. In order to estimate the market value of that house, he must apply a local sales modifier, which shows the relationship between these construction costs and the sale price of a new

building in his municipality as of a given date. The manner in which a local modifier is constructed is explained in Appendix C.

Experience indicates that within a municipality the local modifier does not vary significantly among classes of buildings of a particular use. If the local modifier, say 125, has been determined on the basis of an examination of D-6-A houses, it is assumed that 125 is the local modifier for all houses in the municipality. Therefore a property similar to those in a comparative sales analysis in all respects except class of building can be included in the analysis. The cost factors in the *Handbook* are applied to the building. Then the total cost of construction is adjusted by the local modifier to provide an estimate of the market value of a new building of that class. If the building has suffered depreciation, a depreciation allowance is made and the final result is an estimate of market value for the particular building. The market value of the property is then estimated on the basis of comparative sales.

It may be that one local modifier can be applied to all buildings in a municipality. However, a sales modifier based on a sample of residential buildings should not be applied to non-residential buildings unless it can be shown that the modifier does represent the difference between cost factors in the *Handbook* and the sale prices of such buildings. Of course, if there are insufficient sales to develop a local modifier for non-residential buildings, the modifier developed from residential sales must be applied to them.

Units of Comparison

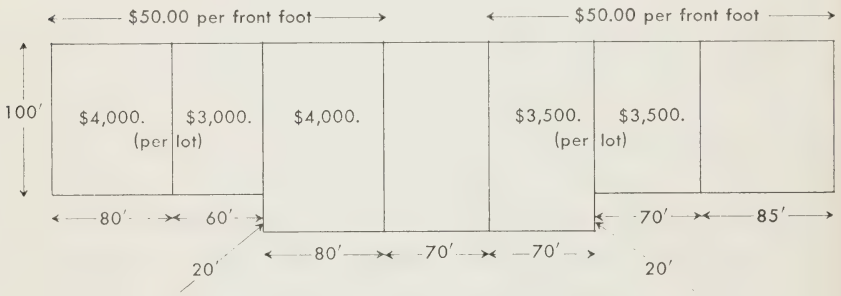
There is no universal pattern which the assessor may use to compare properties. Dwelling units may be compared on the basis of an almost unlimited number of variables such as: location, type of construction, number of storeys and age. Hotels and motels are sometimes compared on the basis of the number of rentable rooms, room rents and beverage room gallonage. Square feet of selling area, front feet of display area and gross rents are well known methods of comparing rental properties. The assessor must examine the entire real estate market in his locality to determine the units of comparison used by buyers and sellers for each type and use of property, and base his comparisons on these.

In residential neighbourhoods, value estimates are often converted from value per lot to value per foot of street frontage. In commercial areas, the unit most commonly used is value per foot of street frontage, but value per square foot of developed area or of selling area is also widely accepted. In industrial areas, value per square foot of developed area is often used, while in rural areas, the only widely used unit is value per acre. The conversion of value estimates into unit values often facilitates the recognition of such basic considerations as trends in the movement of land values.

The decision as to whether value estimates should be converted into unit values and, if so, what units should be chosen, should be based upon how investors purchase properties. For example, conversion of residential land value estimates from a per lot basis to a per front foot basis is useful only if residential land is purchased on that basis.

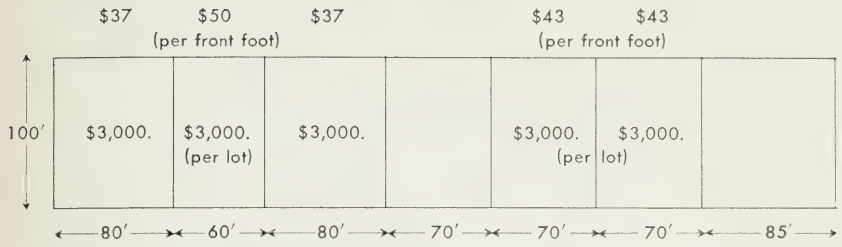
In the situation shown in Figure 2, conversion is justified since it indicates a common measurement of land values. Figure 3 illustrates a situation in which comparisons should be made on a per lot basis; conversion to any other unit of comparison would only confuse the issue.

FIGURE 2



A further refinement of unit values advocated by many assessors is the construction of width, depth and corner influence tables. The justification for these tables is the feeling that there are patterns of land values consistent with the widths of lots, with their depths, and with the locations of the lots in relation to street corners. An assessor determines the typical width and depth of a lot in a particular neighbourhood. On the basis of sales he assigns basic unit values to the

FIGURE 3



width and depth of this lot. He then compares each lot he values with the typical lot and makes adjustments to the value estimate of the lot for any differences in width or depth between it and the typical lot. In general, the width and depth tables discount the unit values of these portions of a lot which are in excess of the typical lot. For example, suppose the typical lot has a street frontage of 50 feet and the estimated unit value is $20 per front foot. If the lot being valued has a 60 foot frontage, the middle 50 feet are valued at $20 per front foot and the five feet on either side at something less than $20.

Corner influence tables purport to show how land values decline as one moves away from street corners. Corner influence tables may show the decline in absolute terms such as a decline from $50 per front foot at the corner to a value of $10 per front foot in the middle of the block, or the decline may be shown in percentage terms with corner values of 100% and the mid-block values as a percentage, e.g., 60% of the corner value. It is also possible, of course, to show width and depth tables in percentage terms. If the assessor is convinced his tables reflect the market accurately, he can use them as a substitute for sales in neighbourhoods where sales and income data are scanty or non-existent.

Width, depth and corner influence tables should be used only when the assessor discovers consistent patterns of land values that can be reflected by the tables. The tables should be used with care and discrimination. Since they are based on sales, they should be continually checked against sales. Properly used, tables provide an accurate picture of the distribution of land values in a neighbourhood. Improperly used, i.e., not related to market data, they provide only a meaningless exercise in arithmetic.

MULTIPLIERS

An extremely useful method of comparing income properties is the gross rent, or gross income, multiplier which analyzes comparability on the basis of the ratio of gross rent to sale price. The gross rent multiplier technique is so widely used for apartment buildings and motels that it is often referred to as a fourth method of valuation. However, it is a technique for estimating the value of a property on the basis of the sale price of comparable properties. The ratio of gross rent to sale price is merely another criterion of comparability.

No confidence can be placed in the results of an analysis based on gross rent multipliers unless the properties are first classified according to use and location. Once this has been done and comparability of properties determined on the basis of these criteria, the multipliers for each classification are calculated.

The multiplier for each class of property is derived from market data—the sale prices and gross rents of each property in the samples selected from these property classes. The multiplier is determined by selecting the median ratio of gross rent to sale price, not by taking an arithmetic average of the ratios. Once a multiplier has been calculated for each class, it can be applied to the known gross rents of all properties in the respective classes to provide an estimate of market value for each property. The accuracy of gross rent multipliers increases as the number of sales included in the sample increases.

The gross rent multiplier technique is essentially a short-cut method of applying the comparative sales method of valuation. Rather than make four classifications of property, the multiplier is substituted for classification according to site and type of building. The theory underlying the multiplier technique is that the magnitude of the ratio is influenced primarily by use and location but not by site or type of building. Any differences in site and/or building among properties in a classification will be reflected by the gross rent.

Whenever gross rent multipliers are employed, the classification of properties incorporated in the analysis must coincide with the classification made by investors in the market. The market must be examined carefully to ensure that the classification is correct.

One system of classification has been noted. However, a survey of the San Francisco real estate market indicates that gross rent

multipliers for apartments in that area vary on the basis of size and condition of the building but are not affected by location.[1]

TABLE 1

PROPERTY COMPARISON CHART

	USE
Neighbourhood	
	Physical environment—topography, etc.
	Economic characteristics—level of activity
	Government regulations and taxes—zoning, property taxes, etc.
	Personal considerations—level of income, homogeneity of population
Location	
	Compatibility
	Access to transportation
	Quantity and quality of municipal services
	Locational requirements determined by use
Site and soil conditions	
	Topography
	Load-bearing quality of the soil
	Shape and dimension
	Homogeneity
	Site requirements determined by use
Building	
	Design
	Character of construction
	Quality of construction
	Shape
	Size

In the preceding discussion of the criteria for comparing properties it was implicitly assumed that each factor could be considered in isolation; this was done solely as a device for presenting the material. In reality, all the factors interact with one another and it may be impossible to separate the effects of particular factors, for example those of neighbourhood and location, or those of site and

[1]Recht and Loewenstein, Variations in Rates of Return, *The Appraisal Journal,* April 1965, pp. 243-248.

location, on the market value of a property. Presumably, sales do reflect all the relevant underlying influences on market value. It is the responsibility of the assessor to isolate the most significant factors so that he can make valid predictions of market value for those properties that have not been sold.

Comparability of Transactions

In order to use the comparative sales method of valuation properly, the assessor must ensure that the transactions are themselves comparable. In essence, the assessor determines what constitutes a typical transaction in his municipality and includes in his analysis only sales based on typical transactions. Alternatively, he may adjust the actual sale price to reflect what he feels it would be if the transaction were typical.

The problem of defining a typical transaction revolves around four considerations:

(i) The degree to which the transaction is made in the 'open market';

(ii) The amount of pressure exerted on either the buyer or seller, i.e., the willingness of each to take part in the transaction as well as their motives for participating;

(iii) The degree to which the buyer and seller are informed about the potential uses of the property and about conditions in the market generally;

(iv) The manner in which the transaction is financed.

Open Market Transactions

An open market transaction requires that the property be advertised for sale in some manner for such a period that any interested purchaser has the opportunity to inspect the property.[2] It also implies that the purchaser made some effort to look at all available alternative properties.

The transaction itself must be made at 'arm's length' if it is to qualify as an open market sale. That is, all the terms of the sale are recorded in the Registry Office, or are otherwise available to public scrutiny. A sale within a family or between a parent and a subsidiary company must be carefully examined to ensure that the transaction is

[2]The property may be listed with a real estate broker, advertised in a newspaper or advertised privately.

based on the usual market criteria. If the sale does not satisfy these criteria, it may have to be discarded when preparing a sales analysis.

Pressure on Buyer or Seller

A sale may be invalid as a reflection of market value if abnormal pressure is exerted upon either the buyer or the seller to take part in the transaction. A sale made under the threat of expropriation, as well as an expropriation, a foreclosure, and a sale made to liquidate assets in order to pay succession duties, are examples of transactions in which the seller may be under more than the ordinary amount of pressure to sell. Transactions in which the buyer is forced to buy are less frequent and more difficult to recognize. The purchase of contiguous property by a farmer, retailer or industrialist is frequently listed as an instance when the purchaser has been forced into the transaction. However, it must be shown that abnormal pressure was exerted upon the purchaser before the sale is discarded as indicative of market value. It may be that the price offered is a good indication of the purchaser's estimate of the property's productivity. If this is the case, then the sale may well be accepted with perhaps some allowance for the purchaser's weaker bargaining position.

Knowledge about the Property of Buyer and Seller

Unless it can be conclusively shown to the contrary, it should be accepted that the parties in an otherwise typical open market transaction are adequately informed about the current condition of the property as well as its potential uses, and about the state of the market. This condition will generally hold true for transactions in rural, commercial and industrial properties. Where residential properties are concerned, it is generally accepted that sellers are better informed than buyers. They have a better appreciation not only of their own property but, through their real estate agents, of the condition of the market as well.

Financing of the Transaction

Within any particular market for real property, there will be a typical method of financing purchases. The price at which the property is listed, as well as the transaction price itself, will be based on the premise that the purchase is financed in the typical fashion. If, for

some reason, an otherwise typical open market transaction is financed differently from the normal method, the price should be adjusted to reflect the influence which the abnormal method of financing has on it. When sufficient sales with typical methods of financing are available, it is possible to ignore the other sales. In many instances the sample of otherwise typical transactions can be expanded, and thereby improved, if the sales with unusual methods of financing are adjusted to reflect typical behaviour. This adjustment procedure is often referred to as calculating the 'cash equivalent'. Since it is a process of adjusting an unusual financial arrangement to the typical arrangement, it might be more accurately referred to as calculating the 'market equivalent'. Strictly speaking, the adjustment is to cash equivalent only when the typical method of financing a purchase is straight cash.[3]

Transactions in residential property generally involve a mortgage or some other type of credit arrangement. Those sales that involve only first mortgages through, or guaranteed by, Central Mortgage and Housing Corporation or through some financial institution such as a chartered bank or a trust company, and cash down payments are normal throughout Ontario and may be regarded as typical transactions. Second mortgages, the exchange of property or a promissory note held by the seller are not as common and sale prices that include any or all of these will, in general, require some adjustment. It is more difficult to generalize about the typical method of financing for commercial and industrial properties. Indeed, it is quite possible there will be so few sales of such property that it will be impossible to determine the typical financial arrangements. If this is the case, some method of valuation other than comparative sales should be used.

The adjustment of an actual sale price to reflect the market equivalent of a typical transaction is illustrated in the following example.

[3]Recorded sale prices may also have to be adjusted if the transaction includes items of personal property. Sales of rural, cottage, commercial and industrial property often include personal property. Where sales of this nature are made, the estimated value of these items must be deducted from the sale price before an estimation of the market value of the property can be made.

TABLE 2

ADJUSTMENT TO MARKET EQUIVALENT

Consideration	Reported Sale Price	Adjusted Sale Price
Cash payment	$15,000	$15,000
First mortgage	50,000	50,000
Second mortgage	20,000	14,000
Residence in trade	15,000	17,000
Total	$100,000	$96,000

In this transaction the total recorded sale price of $100,000 includes a cash down payment, a first and second mortgage and the former home of the purchaser. The first mortgage, which conforms to local market conditions with regard to amount, interest charges and terms of repayment, does not warrant adjustment. Investigation of the second mortgage market discloses that, although second mortgages are usual in this type of transaction, the risk associated with this form of investment is such that second mortgages are generally discounted thirty percent. Despite its face value of $20,000, this particular second mortgage could not be sold for more than $14,000. The estimated market value of the residence included in the transaction is $17,000 rather than $15,000, the value placed on it for the transaction. The market value, as estimated by determining the market equivalent of the sale price, is $96,000.

The discussion in the preceding section can be summarized in tabular form. The information contained in Table 3 indicates nothing about a property itself; that information is contained in Table 1. The purpose of Table 3 is to list the data an assessor needs in order to determine the typical transaction and, on that basis, to estimate the comparability of transactions.

Comparability of Market Conditions

MARKET CONSIDERATIONS

The conditions in the market for real property must also be considered when applying the comparative sales method of valuation. In order to make a valid analysis of such conditions it is necessary

TABLE 3

TRANSACTION EVALUATION CHART

Seller		
Name		
Motive for selling		
Method of advertising property for sale —through a real estate broker —newspaper listing —privately		
Period of time property on the market from: to:		
Number of potential buyers who made offers to purchase		
Buyer		
Name		
Motive for buying		
Period of time during which potential properties were examined from: to:		
Number of properties examined		
Date of transaction	Actual	Market equivalent
Terms of Sale		
Cash		
First mortgage		
Second mortgage		
Other (specify)		
Total consideration (actual sale price)		
Adjusted sale price		

to first understand what is meant by the term 'market' when used in this context.

A general definition of a market might be: the area in which buyers and sellers of a commodity, in this case real property, are in communication with one another. It is possible for a market to consist of only two persons. For example, a farmer who wishes to acquire additional acreage from a neighbouring farm or an industrialist who wishes to expand onto contiguous property, would constitute a unique market for real property. More often, the real property market consists of a number of individuals with several

prospective buyers for each property and several potential sites for each prospective buyer. The size of the market depends to a large extent upon the type of property that is being traded. In rural municipalities, the largest market is for farms; in urban municipalities, it is for residential properties, with the markets for commercial and industrial properties substantially smaller. Each market for the various uses of land can be segregated into sub-groups, such as, single family and multi-family residential. Markets can also be subdivided according to location, for example, suburban or downtown retail areas.

Within each market the assessor should attempt to establish as large a market area as possible. In this way, he can construct a better sample and recognize trends more easily. The market areas should be defined so that the values of properties within them are influenced by the same factors. A market area will never be smaller than a neighbourhood and may encompass several neighbourhoods, provided the predominant use in them is the same. The market area must not be so large as to obscure differences in location or in use. For example, widely separated residential areas should not be regarded as one market. Even though the use is the same, locational differences may well result in different market forces. It would be equally improper to include neighbourhood stores on suburban side streets in the market for retail outlets in shopping centres.

Once the market areas have been identified, it is then possible to analyze the market conditions operating within their boundaries. The term 'market conditions' refers essentially to the relationship between the supply of properties available for sale and the demand for these properties. A property sale is made under specific market conditions which influence the price agreed upon by the parties to the transaction. If these market conditions change, other influences will affect the price-determining process so that similar properties may sell at different prices simply because market conditions have changed. In the past, it was widely accepted that there was a regular cycle to changes in market conditions and the level of activity in the real property market. It is now generally accepted by land economists and other analysts that the pattern of market activity is more complex and that analysis of these conditions is more difficult than was formerly believed.

When an assessor uses the comparative sales method of valuation, he should have some idea of the market conditions that influenced the property sales he wishes to use in his analysis. If the market is active, he can select his sample from sales that occurred in a relatively short period of time, perhaps six months or less, and be reasonably sure that market conditions remained constant over that period. This happy circumstance, in that it requires little market analysis, will be rare as few municipalities have real property markets of sufficient activity. Thus it is necessary for assessors to examine the market in order to determine:

(i) The length of time market conditions are similar;
(ii) The manner in which conditions change over time;
(iii) The effect of any such changes on price.

With this information assessors can estimate the period of time over which sales were influenced by similar market conditions, and secondly, the amount by which sales made under different market conditions must be adjusted to reflect current conditions. It will, of course, be necessary to adjust sale prices only when the period of similar market conditions is not long enough to provide sufficient sales for analysis.

Market Indicators

Although the complexities of the real property market are such that refined market analysis is a difficult and time-consuming proposition, a number of indicators of market conditions are available. If these are examined an assessor can obtain a general indication of market conditions adequate for his needs and equal to that of most people operating in the market. The most useful indicators are:

(i) Volume of transactions;
(ii) Amount of new construction;
(iii) Amount of land available for development;
(iv) The number of mortgage foreclosures;
(v) Vacancy rate.

The volume of transactions is the most direct measure of activity. When the rate at which transactions are made is high, prices either remain steady or will tend to rise. Rising prices indicate that the supply of properties available for sale is not sufficient to meet the total demand. Conversely, when the volume of transactions is

low, there is a tendency for prices to fall off, indicating that the supply of properties on the market is more than adequate to meet all demand and that owners are willing to lower their asking prices.

The volume of transactions can be determined from the county registry or land titles office where property transfers are recorded. The precision with which the volume is measured will be improved if changes of ownership resulting from mortgage foreclosures and expropriations are excluded.

The amount of new construction can have a significant effect on the level of market activity. When the level of new construction is high, the resultant increase in supply of accommodation may serve to ease any conditions of excess demand in markets for developed properties. In general, new construction serves to keep property prices from rising as rapidly as they would otherwise. However, the imperfections of the development industry are such that new construction may exceed the demand for accommodation with the result that prices may fall. Thus, the implications of new construction are not always readily apparent.

The amount of new construction can be measured by building permits and other data recorded at the municipal building inspector's office. It is also useful to record intended new construction whenever such information becomes available.

The amount of land available for development, both within built-up areas and on the fringes of development, may have a leavening influence on the market for developed properties. Owners will be hesitant to raise their asking prices excessively lest prospective buyers decide to have a new property developed. This particular market indicator is less direct than any of the others and need be used only when the other indicators do not provide a clear picture of the market situation.

For the most part, the assessor will have in his office all the information he needs to determine the amount of land available for development. However, he may be able to obtain additional information from the municipal or county planning offices.

The number of mortgage foreclosures provides an indication of the market's health. A high or rising level of foreclosures may indicate that there has been over-investment in real estate and

that the level of activity will fall in the future. The rate of foreclosures is also influenced by the ease with which credit can be obtained, so that it is not entirely affected by conditions in the real estate market.

Information on mortgage foreclosures can be obtained from the registry or land titles office.

The level of vacancy rates is a useful indicator of the health of the market. An above level of vacancies is a sign that there may be an excessive supply; a below average level indicates excess demand, while an average level—around two percent—indicates a market that is in equilibrium.

Of all aspects of the comparative sales method of valuation, the analysis of market conditions has been the most neglected by valuation theorists and practitioners. For instance, there is no accepted index of real estate market activity currently available. This neglect can be attributed directly to the refusal of most assessors and appraisers to accept sales as the best evidence of market value. Although many land economists have analyzed the real property market in considerable detail, their research has, for the most part, been ignored by the valuation professions. There is no question that, when sales are placed in their proper perspective in the valuation programme, the analysis of market conditions will improve. Until then, assessors must rely to a large extent on their intuition and experience when analyzing market conditions.

Chapter IV

INCOME CAPITALIZATION METHOD OF VALUATION

> "(The) value of a property is the present worth of the net income it will produce during the remainder of its productive life."
> American Institute of Real Estate Appraisers, *The Appraisal of Real Estate,* Chicago, 1962, p. 233.

The market value of a property is often defined as the present worth of all the anticipated net benefits that will be derived from that property.[1] This definition of market value can be examined in relation to our definition of market value—the price at which a sale is most likely to occur—if we regard net benefits as the productivity of a property.

In general, the productivity of all multi-residential, commercial and industrial properties, as well as all other properties that are rented, is reflected in the money income owners derive from them. A prospective owner capitalizes the income he expects to earn from the property and bases his offer to purchase on the present worth, i.e. the capitalized value of the anticipated income. Similarly, an owner who is considering selling his property compares the price he is offered with his expectations of future income to be produced by the property. When these conditions hold, we can be sure that the transaction price is no greater than the buyer's estimate of the capitalized value of the future income and no less than the seller's estimate. Thus the price at which a transaction is most likely to occur lies somewhere between these two estimates.

Since all property that is utilized, regardless of how it is used, is productive to one degree or another, it might be argued that the

[1] A.A. Ring, *The Valuation of Real Estate*, Prentice-Hall Inc., Englewood Cliffs, N.J., 1964, Chap. 1
also,
S.A. Kahn, F.E. Case, and A. Schimmel, *Real Estate Appraisal and Investment*, The Donald Press, New York, 1963, Chap. 3.

market value of all real property is equal to the capitalized value of its annual productivity, i.e. its annual net benefits. While this is a valid statement, the definition of market value in terms of capitalized net benefits (and the income capitalization method of valuation) is limited to properties that produce a money income, or to which such an income can be imputed, as money income is the only measurable indicator of productivity.

The income capitalization method of valuation encompasses any technique by which a money income stream is converted into an estimate of market value. Inasmuch as the method can be applied only to those properties whose productivity can be expressed in money terms, it is of more limited usefulness than the comparative sales or cost methods of valuation. However, it may well be the most accurate way to estimate the market value of such properties as apartment houses, retail and other commercial stores and light industrial plants. Doubts as to the appropriateness of the income method of valuation can be resolved by asking: "Is the property owned by an individual who is interested primarily in the future money income it will yield to him?" So long as the answer is in the affirmative, the property is one that may be valued by the income method of valuation.

The term 'income', as it is used for valuation purposes, is based on the economist's definition of income as the net payment received by a factor of production, or the owner of the factor, after all the expenses necessary to maintain that factor in operation have been deducted. Since income is not synonymous with revenue, the total annual rent or income produced by a property must be reduced to an estimate of net income before it can be capitalized into an estimate of market value. Furthermore, the period of time over which the income will be received, as well as the capitalization rate by which the net income is converted into an estimate of market value, must be predicted.

In brief, the assessor who wishes to use the income method of valuation must, after classifying the property according to use, location, site and type of improvement, estimate the following:

(i) The net income derived from the property;
(ii) The rate at which the net income should be capitalized.

Once these estimates have been made the assessor can use one of several mathematical techniques to calculate the present worth of the property's anticipated net income—its capitalized earning ability —which forms the basis of his market value estimate. These techniques provide an estimate of market value based on the capitalization of income with a superficial appearance of accuracy that may not be merited. In fact, the income capitalization method of valuation strains an assessor's powers of prediction more than any other method. The accuracy of the value estimate derived from income data depends ultimately on the sources of information used by the assessor as well as his ability to interpret the data.

Processing Income

Estimation of Gross Income

The first step in the application of the income method of valuation is the estimation of total revenue, or gross income, earned by the property. Gross income is estimated on the assumption that the property is fully utilized during the entire year with no losses of revenue from vacancies or the failure to collect rents from the tenant.

Information upon which estimates of gross income can be based comes from three sources:

(i) Rents, past and present, paid by tenants for space in the property being valued;
(ii) Rents paid by tenants in similar properties;
(iii) Interrogation of prospective tenants to determine what they would be willing to pay for space in the property.

Market rents v. contractual rents: Once income information is gathered, it must be evaluated to determine if it reflects what a typical landlord could expect to earn for the type of accommodation he is offering. The assessor need not be bound by contractual rents if he feels that they differ from market rents. He is interested in what the typical tenant would be willing to pay for the occupancy of a particular property for a specific period of time.

However, the contractual rent, the payment agreed upon by a tenant and landlord for the former's occupancy and use of a property, must not be ignored when estimating market rent. It always serves as a starting point for estimating gross income and there may be instances when it can serve as the estimate of gross income. For

example, if a "Triple A" tenant such as a large oil company or a chartered bank has a lease covering the remaining useful life of a property, the assessor would be justified in using contract rents when valuing the building.

The estimate of market rent must be based on rental data gathered from the market, that is, rents paid in the past for the subject property as well as for comparable properties. Although the assessor is concerned with future income, he cannot estimate it properly unless he analyzes rents being paid currently as well as those paid in the past. Only in this way can he judge rent levels or detect trends in rent movements and rent differentials for various classes of properties. The assessor must not base his estimate of market rent on an average of past rents; he must prepare his estimate on the basis of what the typical tenant is likely to pay. For those properties where no revenue is clearly designated as income from the property, for example owner-occupied properties, the assessor may impute an income to the property if he has been able to estimate a market rent for comparable properties.

Management: When considering property used in a business enterprise it is often impossible, at first glance, to make a separation between income that is attributable to the property and income attributable to the management of the enterprise. The managerial efficiency of a business will be reflected in the income derived from that business. In such cases the assessor must bear in mind that the gross income he discovers will be influenced by management efficency. Where management is good, the gross income will be correspondingly higher than where it is average or poor. Consequently, part of the gross income of the property must be assigned to management so that the figure of gross income used by the assessor reflects only the income from the property.

If the assessor finds that gross income from a property is above average for that particular type of property, he must determine if this excess income is the result of some factor related to the property or is due to superior management. If the latter is the case, gross income must be adjusted to take account of the management factor. A well run property will have an above average income relative to assessment and a poorly run property will have a below average income relative to assessment. In neither case may consideration be given in

the assessment valuation to the quality of management. The income the assessor must estimate, and upon which he must base his valuation, is that which would be derived from typical management of the property.

It will be impossible for the assessor to determine how much of the gross income of a particular property should be assigned to management and how much to the property, until a number of similar properties have been analyzed. Once this has been done, the assessor will be able to determine the relative efficiency of management in each case. He will, however, still have the problem of determining how much of the income should be assigned to management. Conversely, where management of the enterprise is poor, he must determine how much to add to gross income to compensate for inefficient management.

Although difficult, this is not an insurmountable problem for the assessor. In making preliminary surveys of his municipality, he will estimate the rate of return each businessman expects from his operations. He will be able to estimate, on the basis of this survey, the average rate of return. Where management is above average, the rate of return will also be above average. The assessor may then discount the gross income of the property by the difference between the actual rate of return for that property and the average rate to estimate the gross income if management were, in fact, average. An assessor who feels that gross income should be adjusted for management must be careful to analyze the property income annually to ensure that such an adjustment is still warranted.

Leases and rental agreements: Just as the methods of financing are important in evaluating a sale price, the nature of the lease may be significant when evaluating the contract rent paid by a particular tenant. In addition to the contract rent, the terms of the lease will indicate whether the income received by the landlord is stable; it will define the responsibilities of the landlord for maintaining the property and it will show how long he has received the current income as well as how long he will continue to receive it. There are four principal forms of rental agreements which may be incorporated in a lease:

(i) Month to Month—Generally an agreement to occupy a unit for less than a year, it may be verbal;

(ii) Yearly Lease—A stated amount of money for the right of occupancy for a set period of time—usually three years;

(iii) Percentage Lease—It usually sets minimum rental, say $300 per month, plus a set percentage of the gross volume of turnover, but it has many alternatives including maximums on the amount of rent realized by a percentage of the turnover;

(iv) Step-up Lease—Usually includes a stepped-up monthly rent over a period of years, i.e.,

1st year —$100 per month

2nd year—$200 per month, etc.

Sometimes, however, such leases take the form of increasing percentages of the volume of business, i.e., 2% on the first $100,000, 2½% on $100,001 to $300,000, etc.

The assessor should determine whether or not there is a typical form of lease used in the municipality, or if the form varies according to the type of property under consideration. If he finds he can establish a typical rental agreement, then he will be able to devise a method of adjusting those rentals not based on the typical lease. The rents based on leases that confer unusual benefits on the tenant will have to be raised, whereas those inordinately advantageous to the landlord will need to be lowered. Whether adjustments are warranted, as well as the amount of adjustment, will have to be determined on the basis of market analysis.

The examination of leases and contract rents will be made more systematically if a lease analysis sheet is prepared. The data to be recorded on the lease analysis sheet can be divided into three groups: identification, description and allocation of responsibility. The first group includes the location of the property and the names and addresses of the landlord and tenants. The second group includes such information as: the date when the lease was signed; the period covered by the lease; the type of lease; the tenant's rent payments. It also includes such conditions of the lease as: option by the tenant to renew or cancel the lease, or to purchase the property; the right of the landlord to assign the tenant's interest to some third party; security put up by the tenant and inducements offered by the landlord. The third group of data includes information such as: the allocation of expenses between the landlord and tenant; the compensation paid to the tenant for improvement he makes to the property; the arrangements made between the landlord and tenant in the event of a fire, some other disaster or expropriation of the property.

TABLE 4

LEASE ANALYSIS SHEET

Identification
- Location of property
  - Street address
  - Assessment roll No.
- Name of landlord
  - Address
- Name of tenant
  - Address

Description
- Date lease signed
- Period lease in effect
  - From
  - To
- Type of lease
- Contract rent
- Lease options
  - To renew
  - To cancel
  - To purchase
- Security for landlord
- Inducement to tenants

Allocation of Responsibility
- Expenses paid by landlord
- Expenses paid by tenant
- Arrangement re:
  - Compensation for improvements to property made by tenant
  - Destruction of or damage to property
  - Expropriation of property.

Quality and durability of gross income: The lease analysis sheet provides information the assessor can use to estimate the quantity of income, i.e., the size of the income payment. Almost equally important, it provides him with a source of information for estimating the quality and durability of income.

The term 'quality of income' refers to the confidence the owner can place in the tenant. Property leased to a tenant with a high credit rating may be let at a lower rate because the owner is sure he will have no difficulty in collecting the rent payments, nor is there much danger that the tenant will go bankrupt or otherwise cause the owner difficulty with regard to his occupancy. The question of quality of income may be important when estimating a risk element in the capitalization rate. A property producing an income of high

quality may warrant a lower risk allowance in the capitalization rate than does one where the quality of income is lower.

The durability of income is based on the type of lease and the period over which it extends. A durable income is one that does not vary with the tenant's income and for which the period of time it will remain in effect is stated explicitly. A long-term rental agreement is considered more durable than one that will terminate in the near future. The level of rents may be influenced by the type of lease as well as by the length of time the lease will be in effect. Like quality, durability of income is often important when estimating risk for the capitalization rate. It is often difficult to separate the influences of the two on risk, for the quality of income may depend to a significant extent on the durability of income. Assessors need not hesitate to use contract rents in those instances where the quality and durability of income are high.

Vacancy and Collection Losses

When the assessor has estimated gross income, he must recognize that most properties experience vacancies or suffer losses because tenants are unable to pay their rent. These vacancy and collection losses are estimated as a percentage of the total gross income and deducted from that figure to provide an estimate of effective gross income. Vacancy and collection losses vary among municipalities and also within municipalities according to the use and location of the property. If the properties are classified according to use and location, the assessor will generally find that these losses vary within a relatively narrow band. Consequently, the assessor will be able to assign a typical percentage for vacancy and collection losses to each class of property. Most market analysts are agreed that, when the market is in equilibrium, the rates for vacancy and collection losses vary between a low of 2% for the best classes of property and a high of 10-12% in the poorer areas.

The assessor can obtain data upon which to base his estimates of typical vacancy and collection losses in his municipality by:

(i) Examining present and past experience of the property he is valuing;
(ii) Examining the histories of similar properties;
(iii) Comparing contract rents in the particular property with rent levels in similar properties;

(iv) Determining the nature and remaining period of the leases in the subject property;
(v) Examining the credit rating of the tenants in the subject property.

Since the assessor is interested in typical market behaviour he should, as a rule, use average vacancy and collection losses in his analysis. Actual losses should be used only when he uses contract rent as an estimate of gross income. Otherwise, he should use the typical percentage.

Effective Gross Income

The effective gross income is the income that the typical landlord or investor in real property expects to earn before payment of expenses. It is calculated by deducting an allowance for vacancy and collection losses from gross income.

Expenses

Effective gross income is not a suitable measure of income for the assessor to convert into an estimate of value. All those expenses necessary to maintain the building in operation and typically paid by the landlord must be deducted from effective gross income before a proper measure of income—net income—can be obtained. When valuing a particular property, the assessor is concerned with the amount of expenses the typical investor anticipates. However, the actual expenses incurred are less apt to vary from one property to another than are the gross incomes earned.

Other sources of information concerning expenses are the record of comparable properties and interviews with investors and potential investors. The assessor is able to determine from such sources not only the dollar amounts of expenses, but also the typical allocation of expenses between landlord and tenant.

Expenses incurred by the owner of the property being valued and by the owners of comparable properties are the best evidence of the anticipated expenses. Whenever possible, assessors should collect expense statements for at least the previous three years. These data will show any trends in the direction of expenses and catch those expenses such as fire insurance, which are paid biennially or triennially. All expenses should be converted to annual figures in order to obtain consistency in the analysis.

The analysis of expenses is similar to that of gross income in that the assessor attempts to estimate what investors are currently predicting about the future. He does not attempt to prognosticate and is not concerned with whether or not the predictions of the future are correct—unless, of course, he is an investor as well as an assessor.

After a number of properties have been analyzed, the assessor may find there are consistent relationships between expenses and gross income, expenses and square foot area of the building, and so on. For example, insurance costs may average 1% to 1½% of gross income, heat and electricity may be so much per room or per square foot, salaries and wages may be 5% to 7% of gross income. These relationships provide the assessor with a crude checking mechanism but should not be used as the sole method of estimating expenses unless investors estimate expenses in the same fashion.

Deductible expenses: Deductions for expenses should reflect what the owner may reasonably anticipate as expenses during the remaining useful life of the property. In analyzing the operating statement of a property, it will usually be found that some expenses shown are not deductible for appraisal purposes. All expenses that are required to maintain the flow of income from the property are deductible. These include:

(i) Maintenance;
(ii) Property insurance;
(iii) Janitorial service;
(iv) Utilities;
(v) Salaries;
(vi) Management fees (management of the property);
(vii) Reserves for replacement of taxable capital equipment.

This list is not all-inclusive, but the assessor should have no difficulty in estimating expenses if he asks himself the following about each expense item:

(i) Assuming the property is owned outright (clear of mortgages), is the expense necessary to maintain it in operation?
(ii) Is the expense typically paid by the landlord?

Only if the answer is "yes" to both questions should the expense item be deducted from effective gross income.

One expense that meets these criteria but is not deductible from effective gross income is the payment of property taxes. Property tax

payments are generally included by appraisers as items of expense but the purpose of the assessor's valuation—to provide a base for the property tax—precludes their inclusion as an expense. The assessor would be admitting implicitly that he knew the value of the property already if he included the tax payment as an expense. In recognition that the tax payment will influence the income derived from a property, an allowance for property taxes is included in the capitalization rate.

Reserves for the replacement of such equipment as elevators and escalators, which have a shorter life than the building, are often an important element of expense. Machinery such as escalators and elevators will generally have to be replaced at least once while the building remains in operation. Assessors must recognize that most owners will spread the cost of replacement over a number of years rather than bear it out of the income produced in one year. The accepted method of allowing for their replacement is to estimate the cost of the equipment—acquisition cost minus scrap value—and spread this cost over its estimated life. The annual expense item is calculated by means of the formula:

$I = V \times R$[2] where I = annual expense allowance
V = cost of the equipment
R = capitalization rate.

The simplest method of calculating the annual expense allowance is to amortize the cost of the equipment over its estimated useful life, i.e., the capitalization rate is equal to the amortization allowance.

Example—Calculation of a Reserve for Replacement

I. *Given:*
(i) Acquisition cost of elevator $1,500
(ii) Scrap value $ 100
(iii) Estimated useful life 20 years

Procedure:
(i) Calculate the cost of replacement
Replacement cost = acquisition cost — scrap value
= $1,500 — $100 = $1,400

(ii) Calculate amortization allowance
$R = 1/20 \times 100$ = 5%

(iii) Calculate the annual expense allowance
$I = V \times R$ where V = $1,400, R = 5%
= $1,400 x .05 = $70

[2]This formula is explained in Appendix D.

In most instances, an investor will calculate his annual expense on the basis that he has to pay property taxes on the equipment. If he calculates his expense on this basis, he will have to set aside a larger portion of his income each year. The capitalization rate, therefore, will include an allowance for property taxes as well as an allowance for amortization of the cost of the equipment.

II. *Given:* (i) The same information as in Example I
(ii) Estimated property tax allowance 1.5%[3]

Procedure: (i) Calculate the capitalization rate
$R = 5\% + 1.5\% = 6.5\%$
(ii) Calculate the annual expense allowance
$I = V \times R$ where $V = \$1,400$, $R = 6.5\%$
$= \$1,400 \times .065 = \$91$

It is often difficult to decide whether a particular item of expense should be included as maintenance or as a reserve for replacement. There are no hard and fast rules, but three points about reserves for replacement should be borne in mind.

(i) Reserves for replacement should be used as seldom as possible;
(ii) A reserve for replacement should be established only for major pieces of capital equipment;
(iii) A reserve for replacement should be established only when the entire piece of equipment is being replaced.

The replacement of a boiler or some other part of the heating system, the replacement of the roof or part of the electrical or plumbing systems should be treated as maintenance expenses rather than by establishing a reserve for replacement.

Non-deductible expenses: Items of expense that should not be deducted when calculating net income are essentially those that are personal charges against the owner. The major exception to this rule, other than the payment of property taxes, is depreciation. The depreciation of a property is assumed to be reflected in the rent and the anticipated amortization of the investment is included as an allowance in the capitalization rate. The usual non-deductible items of expense that an assessor will encounter are: principal and interest payments on a mortgage, income taxes and personal liability insurance.

[3]The procedure for calculating a property tax allowance is set out on page 57.

Capitalization Rate[4]

Once the data required to determine the comparability of property and to calculate an estimate of net income have been collected and analyzed, a capitalization rate must be developed. A capitalization rate represents the relationship between future annual net income of the property and the present value of that income. The size of the capitalization rate depends primarily upon:

(i) The degree to which present income is preferred over future income;

(ii) The productivity of capital;

(iii) The risk of default associated with the future payments of income.

Capitalization rates are a critical item in the application of the income method of valuation. They must be derived by analyzing sales and other market data if the assessor is to estimate accurately what investors in income-producing properties anticipate these rates to be. Any errors in the capitalization rate will have a compounding effect on the estimate of market value and will produce serious errors in the value estimate.

For example:

If: an income of $1,000 per annum continuing in perpetuity is capitalized at the rate of 7%;

Then: present value of the income is: $V = \frac{I}{R}$

$$= \frac{\$1,000}{.07}$$

$$= \$14,286$$

However, if the actual capitalization rate were 8%

Then: present value of income is: $V = \frac{I}{R}$

$$= \frac{\$1,000}{.08}$$

$$= \$12,500$$

There is an error in the estimate of market value of $1,786 or of 14.3% because the capitalization rate was estimated at 7% rather than 8%.

[4]The concept of capitalization and the manner in which it is applied in the valuation of real property is explained in Appendix D.

Components of the Capitalization Rate

A capitalization rate used by assessors is actually the sum of three component rates—the yield rate, the amortization allowance and the property tax allowance. It is quite possible that the yield rate and the amortization allowance may vary according to the use and location of the property and according to the type of improvement on it. The property tax allowance should be constant throughout the municipality unless there are differential mill rates.

Estimation of yield rates: A yield rate is similar to what is commonly referred to as an interest rate. It reflects the productivity of capital and the value placed on present income as opposed to future income. Investors in real property tend to expect a higher yield rate than other investors in order to be compensated for:

(i) The additional risk associated with the investment;
(ii) The difficulty associated with disposing of the investment;
(iii) Problems of managing this type of investment.

It is the assessor's responsibility to estimate what investors anticipate the yield rate for income-producing properties to be. Preferably, these estimates should be based on actual sales of income properties. Yield rates determined in this fashion will provide the most accurate estimates as long as they are applied to properties comparable to those from which the rates are derived.

The manner in which yield rates can be derived from an analysis of market data is dealt with below (page 65ff). The derivation of a yield rate from market data requires the application of procedures used in the various capitalization techniques. These procedures are described in the context of the techniques and it is easier to understand the derivation of yield rates from market data once these procedures have been described. There are two other methods also based on market data, but not using techniques of the income method of valuation that can be used to estimate the yield rate. These are the summation and band of investment methods.

Summation method: The yield rate determined through the summation method is based on an analysis of the entire field of investment. It is essentially the sum of a number of different factors that, taken together, provide an estimate of the yield rate for real property.

In most instances, the assessor considers four components:

(i) A basic rate equal to that paid for the use of someone else's money assuming there is no risk that the borrower will default, that the loan can be converted to cash without delay and that there is no cost to the lender in managing the loan;
(ii) An allowance for the additional risk of real property investments;
(iii) An allowance for the lack of liquidity of real property investments;
(iv) An allowance for the additional difficulty associated with managing real property investments.

The nearest thing to a pure interest rate in Canada is the rate on long-term Government of Canada bonds. The other allowances must be estimated on the basis of interviews with investors and other experts in the investment field.

Yield Rate: *Summation Method*

Basic Rate	5.0%
Risk	1.5%
Liquidity	1.2%
Investment management	0.7%
	8.4%

Band of investment method: If the assessor uses this method to determine the yield rate, he must examine individual sales of real property. He is not interested so much in the actual sale price as he is in the method of financing the sale. After examining a number of sales, he will be able to develop the typical method of financing the purchase and to estimate the interest rate appropriate to each form of financing. The yield rate will equal the weighted sum of the interest rates applicable to each form of financing. Each interest rate is adjusted by the proportion each type of financing forms of the total price.

For example:

Given:
(i) The typical method of financing is a cash down payment, a first mortgage and a second mortgage
(ii) The cash down payment typically constitutes 20% of the financial bundle; the first mortgage 60% and the second mortgage 20%
(iii) The interest rate applicable to the down payment (the equity rate) is 8%[5]; the rate on the first mortgage is 7%; and the second mortgage is 13%

[5]See Appendix E for a discussion on the concept of an equity rate that is applicable for assessment valuations.

Procedure: The yield rate from the band of investment method is:

20%	of purchase price at	8%	= 1.6%
60%	of purchase price at	7%	= 4.2%
20%	of purchase price at	13%	= 2.6%
			8.4%

Estimation of the amortization allowance: The second component of the capitalization rate is the amortization allowance. This allowance is made by investors who wish to recapture their investment in the property and assessors must make a similar allowance when constructing a capitalization rate. Although the concept of amortization is similar to depreciation to the extent that it compensates for an anticipated future decline in value, it is incorrect to refer to amortization as future depreciation. Amortization is simply a method of allocating the investment in the property over a period of years.

If the investment is allocated between land and building no amortization allowance is applied to the investment in land as it is regarded as a non-wasting asset. Whenever the investment is so regarded, the land residual or building residual technique must be used to capitalize the net income. Otherwise, the property reversion technique, which assumes a single investment in the entire property, must be used.

Fundamental to the application of an amortization allowance is the concept of the property's remaining useful life, often called remaining economic life. The remaining useful life of a property is the anticipated number of years it will remain in its current use and, equally important, continue to produce an income for the owner. The relationship between remaining useful life and the amortization allowance is quite simple. It is based on the assumption that the investor will attempt to recapture an equal amount of his investment in the property each year. Thus, if the remaining useful life of the property is five years, it is assumed that the owner will attempt to recapture one-fifth of his investment each year. The amortization allowance is calculated by expressing the reciprocal of the estimated useful life as a percentage.

For example:

(i) Remaining useful life is 40 years
Amortization allowance $= \frac{1}{40} \times 100 = 2.5\%$

(ii) Remaining useful life is 60 years
Amortization allowance $= \frac{1}{60} \times 100 - 1.6\%$

Estimation of the property tax allowance: The third component of the capitalization rate used by assessors is the property tax allowance. If the assessments are made at actual value then the property tax allowance would equal the current mill rate expressed as a percentage. In those municipalities where assessments are made at less than market value, the property tax allowance must be adjusted. The adjustment is made by multiplying the current mill rate (expressed as a percentage) by the ratio that the level of assessment in the municipality bears to market value. For example, if assessments are made at market value and the mill rate is 25 mills, the property tax allowance is $\$.025 \times 100 = 2.5\%$. However, assuming that assessments in the municipality are made at 60% of market value, then, with a mill rate of 25 mills, the property tax would be $\$.025 \times .60 \times 100 = 1.5\%$.

Capitalization Techniques

When assessing unimproved land, that is a property for which the assessor visualizes a level series of income payments, he capitalizes the income by means of the capitalization formula $V = \frac{I}{R}$ where income equals estimated total net income and the capitalization rate equals the sum of the estimated yield rate and estimated property tax allowance. This relatively straightforward technique must be adjusted when capitalizing the income from a developed property in order to account for variations in income produced by different improvements on the land.

Once the shape and duration of the income produced by a property have been estimated, the assessor must decide which of three techniques—the property reversion, the land residual, or the building residual—he will use to capitalize the income into an estimate of value. Each of these techniques can be used with either the straight-line declining terminal series premise or the level terminal series premise of income payments. The choice as to technique depends on two factors—the amount and type of data available to the assessor, and the requirement of The Assessment Act that the total property value be allocated between land value and building value.

Property Reversion Technique

This capitalization technique is the most realistic because it visualizes the property as an entity and recognizes that any alloca-

tion of property income or of property value between land and building is artificial. The property reversion technique conceives of value as the estimated capital value of the income produced by the property, plus any reversionary value of the property at the end of its useful life.

The most controversial aspect of the technique is the estimation of the reversionary value of the property. The method most consistent with the underlying assumption of the technique is to regard the reversionary value of the property as a percentage of the property's capitalized net income. If this method is used, the assessor must estimate how much the property will decrease (or increase) in value between the present and the end of its useful life. This estimate is expressed as a percentage of the capitalized net income of the property. The reversionary value equals the capitalized net income less the estimated change in value. The assessor calculates the present worth of the reversionary value and adds it to the capitalized net income to arrive at an estimate of current market value.

The second method of estimating the reversionary value of the property is based on two assumptions:

(i) Reversionary value equals the value of the land at the end of the building's useful life;

(ii) The value of the land at the end of the building's useful life is equal to the current value of the land.

If this method is used, the assessor must estimate the current value of the land, which is inconsistent with the underlying assumption of the property reversion technique that the value of a property cannot be allocated between land and building.

Both methods of estimating the reversionary value of the property require that the assessor make rather heroic assumptions about the future. However, the most significant element in the property's current market value is the capital value of the net income so that relatively large differences in the estimate of the reversionary value of the property have relatively small influences on estimated current market value. The influence of the reversionary value on the current value of the property will be smaller, the longer is the estimated remaining useful life of the property. So long as the assessor's predictions concerning the reversionary value of the property are consistent with those of investors in income properties he can use either method.

Another question associated with the reversionary value of the property is the application of a property tax allowance when computing its present worth. A property tax allowance should be included in the capitalization rate as the tax is based on the value of the whole property, not just the portion of the property that produces an income. If a property tax allowance is made only when capitalizing the net income, the property's reversionary value is excluded from the tax base.

Application of the Property Reversion Technique:

(i) Estimate the net income produced by the property;
(ii) Estimate the shape of the income stream;
(iii) Estimate the remaining useful life of the building;
(iv) Estimate the yield rate;
(v) Estimate the property tax allowance;
(vi) Calculate the capital value of the net income;
(vii) Depending on the method of estimating the reversionary value of the property, estimate either—
  (a) the anticipated change in value of the property over its remaining useful life, or
  (b) the current value of the land;
(viii) Estimate the reversionary value of the property;
(ix) Calculate the present worth of the reversionary value of the property;
(x) Add the estimated capital value of the net income to the present worth of the estimated reversionary value of property to arrive at an estimate of current market value.

Example of the Property Reversion Technique:

I. *Given:*
(i) Net income =$8,000
(ii) Shape of the income stream is straight-line declining
(iii) Estimated remaining useful life =40 years
(iv) Estimated yield rate =5.5%
(v) Estimated property tax allowance =2.0%
(vi) Estimated decline in value =80%

Procedure:
(i) Calculate the amortization allowance
$1/40 \times 100$ =2.5%
(ii) Calculate the capitalization rate
R=5.5%+2%+2.5% =10%
(iii) Calculate the capital value of the net income
$V = \frac{I}{R}$ where $I = \$8,000$, $R = 10\%$
$= \frac{\$8,000}{.10}$ =$80,000

(iv) Record the present worth factor for a payment to be received in 40 years if the interest rate is 7.5%[6]
Factor=.0554

(v) Calculate the reversionary value of the property
Reversionary value=20%×$80,000 =$16,000

(vi) Calculate the present worth of the reversionary value of the property
P.W.=I×F where I=$16,000
F=.0554
=$16,000×.0554
=$886.40 rounded to =$900

(vii) Estimate the market value of the property.
M.V.=$80,000+$900
=$80,900 rounded to =$81,000

II. *Given:* The same data as in Example I with the exception that the anticipated shape of the income stream is level

Procedure: (i) Calculate the capitalization rate
F=5.5%+2% =7.5%[7]

(ii) Record the present worth factor of a series of 40 payments at an interest rate of 7.5%
Factor=12.59

(iii) Calculate the present worth of a series of 40 payments of $8,000 at 7.5%
P.W.=I×F where I=$8,000
F=12.59
=$8,000×12.59 =$100,720

(iv) Record the present worth factor for a payment to be received in 40 years if the interest rate is 7.5%
Factor=.0554

(v) Calculate the reversionary value of the property
Reversionary value
=20% of $100,720
=$20,144 rounded to =$20,100

(vi) Calculate the present worth of the reversionary value of the property
P.W.=I×F where I=$20,100
F=.0554
=$20,100×.0554
=$ 1,113 rounded to =$1,110

[6]An allowance for the amortization is not included in the factor since it is assumed that most, if not all, of the reversionary value of the property is attributable to the value of the site.

[7]The capitalization rate does not include a specific amortization allowance since amortization is accounted for in the present worth factor.

(vii) Estimate the market value of the property
M.V.=capital value plus reversionary value
=$100,720+$1,100
=$101,820 rounded to =$102,000

III. *Given:* The same data as in Example I with the exception that:
(i) The estimated current market value of the land =$18,000
(ii) There is no estimate of the decline in value of the property over its remaining useful life

Procedure: (i) Calculate the capital value of the net income as in Example I =$80,000
(ii) Record the present worth factor of a payment to be received in 40 years if the interest rate is 7.5% (yield rate+property tax allowance)
Factor=.0554
(iii) Calculate the reversionary value of the property
R.V.=land value at 40 years
=current land value =$18,000
(iv) Calculate the present worth of the reversionary value
P.W.=I×F where I=$18,000
F=.0554
=$18,000×.0554
=$997 rounded to =$1,000
(v) Estimate the market value of the property
M.V.=capital value plus discounted reversionary value
=$80,000+$1,000 =$81,000

It is clear from these three examples that the estimated shape of the future income stream is much more influential in determining the market value of a property than is the method of calculating the reversionary value of the property.

If the property reversion technique has any major weakness, it is that it amortizes the investment in land as well as the investment in the building. This is not consistent with the concept of land as a non-wasting asset; but, if it is assumed that investors purchase a total property rather than a site with a building on it, it is proper to assume that the total investment, regardless of its components, is amortized over a period of a year.

Land Residual Technique

This technique is based on the assumption that the total value of property is the sum of the value of the building and the value of the site. The assumption that there is a meaningful distinction between the value of the site and the value of the building, and that these can be determined separately, is a carry-over from the influence of Henry George and his advocacy of the site tax. Whether the land residual technique or its counterpart—the building residual technique —is used, depends on the data available. Assuming net income and the components of the capitalization rate can be estimated, the land residual technique is used when the value of the building, that is, its replacement cost less depreciation, can be estimated. Conversely, when the land value can be estimated, presumably through an analysis of comparative sales, the building residual technique should be applied.

Application of the Land Residual Technique:

(i) Estimate the net income produced by the property;
(ii) Estimate the shape of the income stream;
(iii) Estimate the remaining useful life of the property;
(iv) Estimate the yield rate;
(v) Estimate the property tax allowance;
(vi) Estimate the building value;
(vii) Calculate the income attributable to the building;
(viii) Calculate the residual income which is presumably attributable to the land;
(ix) Capitalize the income attributable to land;
(x) Add the estimated building value and the capitalized income attributable to the estimated market value of the property.

Example of the Land Residual Technique:

Given:

(i)	Estimated net income produced by the property	=$8,000
(ii)	Anticipated shape of the income stream is straight-line declining	
(iii)	Estimated remaining useful life	=40 years
(iv)	Estimated yield rate	=5.5%
(v)	Estimated property tax allowance	=2.0%
(vi)	Estimated replacement cost new less depreciation of the building	=$60,000

Procedure:

(i) Calculate the amortization allowance
$1/40 \times 100$ $= 2.5\%$

(ii) Calculate the capitalization rate applicable to the building
$R = 5.5\% + 2\% + 2.5\%$ $= 10\%$[8]

(iii) Calculate the capitalization rate applicable to the land
$R = 5.5\% + 2\%$ $= 7.5\%$[9]

(iv) Calculate the net income attributable to the building
$I = V \times R$ where $V = \$60{,}000$, $R = 10\%$
$= \$60{,}000 \times .10$ $= \$6{,}000$

(v) Calculate the residual income attributable to the land
Land Income = total income − building income
$= \$8{,}000 - \$6{,}000$ $= \$2{,}000$

(vi) Calculate the capital value of the income attributable to the land
$V = \frac{I}{R}$ where $I = \$2{,}000$, $R = 7.5\%$
$= \frac{\$2{,}000}{.075}$
$= 26{,}666$ rounded to $= \$26{,}700$

(vii) Estimate the market value of the property
M.V. = Building value + land value
$= \$60{,}000 + \$26{,}700$
$= \$86{,}700$ rounded to $= \$87{,}000$

The land residual technique is most applicable in the valuation of properties with new buildings for which replacement costs and depreciation allowances can be estimated accurately.

Since land values are more volatile than building costs, the land residual technique should be applied with discretion. A relatively small error in the estimate of income attributable to land will lead to a large error in the estimate of the land value. The error in estimated land value will vary inversely with the magnitude of the capitalization rate and with the land values in the area. The influence of errors in estimates of income derived from land will also be relatively greater when the estimated building value is a large proportion of the total property value. There are two rules of thumb which the assessor

[8]The building capitalization rate includes an amortization allowance.

[9]The land capitalization rate does not include an amortization allowance.

might remember when contemplating the use of the land residual technique:

(i) Never use the land residual technique when the estimated building value constitutes more than 75% of estimated total value;
(ii) Never use the technique when estimated land values in the area are less than one-half (½) of the estimated highest land values in the municipality.

Building Residual Technique

This technique should not be used unless the current value of the land can be estimated accurately. It is most applicable to an income property improved with an older building for which it is difficult to estimate the replacement cost new and/or the depreciation allowance. Like the land residual technique, its major strength is that it provides separate estimates of land value and building value, thereby making it easier for assessors in Ontario to comply with the provisions of The Assessment Act.

Application of the Building Residual Technique:

(i) Estimate the net income produced by the property;
(ii) Estimate the shape of the income stream;
(iii) Estimate the remaining useful life of the property;
(iv) Estimate the yield rate;
(v) Estimate the property tax allowance;
(vi) Estimate the market value of the land;
(vii) Estimate the income attributed to the land;
(viii) Estimate the residual income which is presumably attributable to the building;
(ix) Capitalize the income attributable to the building, in order to arrive at an estimate of the building value;
(x) Add the estimated land value to capital value of the income attributable to the building to provide an estimate of the market value of the property.

Example of the Building Residual Technique:

Given:

(i)	Estimated net income	=$8,000
(ii)	Estimated shape of the income stream is level terminal	
(iii)	Estimated remaining useful life of the property	=40 years
(iv)	Estimated yield rate	=5.5%
(v)	Estimated property tax allowance	=2.0%
(vi)	Estimated land value	=$25,000

Procedure:

(i) Calculate the capitalization rate
R=5.5%+2% =7.5%[10]

(ii) Record the present worth factor for a series of 40 payments where the interest rate is 7.5%
Factor=12.59

(iii) Calculate the net income attributable to the land
I=V×R where V=$25,000
R=7.5%
=$25,000×.075
=$1,875 rounded to =$1,900

(iv) Calculate the residual income attributable to the building
Building income=total income −land income
=$8,000−$1,900 =$6,100

(v) Calculate the capital value of the income attributable to the building
V=I×F where I=$6,100
F=12.59
=$6,100×12.59
=$76,800+$25,000 =$76,800

(vi) Estimate the market value of the property
M.V.=Building value+land value
=$76,800+$25,000
=$101,800 rounded to =$102,000

Extracting Yield Rates from the Market

It was noted earlier (page 54ff) how yield rates can be calculated indirectly through the band of investment and summation methods. Yield rates can also be derived from the data used in the income and comparative sales methods of valuation through the use of the capitalization formula, $V=\frac{I}{R}$. Basically, the process consists of solving the third unknown in the equation—the capitalization rate, when the other two, sale price and net income, have been estimated. It may seem redundant to calculate the yield rate for recently sold properties when the sale price is already known and constitutes the best estimate of market value. However, the yield rates applicable to such properties can be applied to comparable properties that have not sold recently, if one assumes that the anticipated yield rate is constant whether or not the properties have been sold, and that the anticipated yield rate equals the actual rate calculated for the sold properties.

[10]The capitalization rate does not include an allowance for amortization which is allowed for in the present worth factor.

Application:

(i) Classify the income producing properties which have been sold recently according to use, location and type of building;
(ii) Estimate the market value of these properties on the basis of their selling prices;
(iii) Estimate the portion of the investment to be amortized over the property's remaining useful life;
(iv) Estimate the net income produced by each property by processing the total revenue;
(v) Calculate the annual property tax payment and amortization payment on the basis of their estimated allowances;
(vi) Deduct these payments from the net income estimate.
(vii) Calculate the yield rate for each property by dividing the adjusted net income figure by the estimated market value.

The capitalization rate is equal to the yield rate because the other components of the capitalization rate were removed by deducting the annual amounts for property taxes and amortization from net income as expenses.

When a number of properties have been processed the assessor can analyze the yield rates in order to select the rate he feels is most appropriate. He then has a yield rate derived from income and sales data that is applicable to properties comparable to the sample properties. The yield rates should be re-examined annually to ensure that the rates calculated previously are still appropriate. Assessors may find that the yield rate remains relatively constant over time and between various locations as well as between the various types of income properties.

Example of Extracting a Yield from the Market:

Given:	(i) Sale price	=$100,000
	(ii) Portion of the investment to be amortized	=60%
	(iii) Estimated net income	=$9,500
	(iv) Estimated property tax allowance	=1.5%
	(v) Estimated remaining useful life	=25 years
Procedure:	(i) Calculate the annual property tax payment payment=1.5% of $100,000	=$1,500
	(ii) Calculate the amount to be amortized 60% of $100,000	=$60,000
	(iii) Calculate the amortization allowance 1/25×100	=4%

(iv) Calculate the annual amortization payment
payment=4% of \$60,000 =\$2,400

(v) Calculate the adjusted net income
adjusted net income=net income—(property tax payment+amortization payment)
=\$9,500—(\$1,500+\$2,400) =\$5,600

(vi) Calculate the yield rate

$$R=\frac{I}{V} \qquad \text{where } I=\$5,600,\ V=\$100,000$$

$$=\frac{\$5,600}{\$100,000}$$

$$=.056 \qquad =5.6\%$$

Summary

The assessor who wishes to use the income method of valuation should place himself in the position of the typical investor. This means first, he must remember that the maximum value of a property is the present value of the anticipated future income to be produced by the property. Second, he must look for and gather the data which the typical investor gathers; he looks for what the typical investor anticipates so far as gross income, vacancy and collection losses, expenses, yield rates, and so on, are concerned. Very seldom will the assessor use the actual data for particular properties without qualifying it by adjustments based on what he considers to be typical market behaviour. Third, the typical investor generally assumes that current or gross income, expenses, etc. are indicative of the future and will base most of his predictions on current data.

The several mathematical formulae and capitalization techniques are not presented with a view that they be accepted unquestioningly or that they represent the sole means of applying the income method of valuation. Although some evaluation of their relevancy has been attempted, there has been insufficient research into the decision-making processes of investors to say with any degree of confidence which are most appropriate. Furthermore, our knowledge regarding the derivation of capitalization rates and the processing of income is not adequately supported by concrete evidence that the procedures advocated do, in fact, reflect the actions of investors. Until more research has been carried out, the assessor must use those techniques and procedures that appear to be most reasonable and presumably reflect investors' decisions more accurately than any others.

Chapter V

COST METHOD OF VALUATION

> "Any formula in the manual is of value only insofar as it assists the assessor to ascertain the actual value of the property and where the result arrived at through its use is not such value then the formula must be disregarded." Sun Life v. City of Montreal (1950) S.C.R. 220 per Kerwin, J. at 231 and per Estey, J. at 254.

Although this statement does not refer to the companion volume of this publication, the *Handbook of Cost Factors,* it can be applied to the *Handbook* with equal force. If it is used properly and the total costs of construction of a building are adjusted by a local modifier, the *Handbook* should provide the assessor with an accurate estimate of market value new. However, the computations based on the *Handbook* may not provide a good estimate; when this is the case the *Handbook* must be disregarded and some other method used to estimate market value.

There are many properties, i.e. those for which sales and income information are lacking, that cannot be valued by a direct application of the comparative sales or income capitalization methods of valuation. In order to value these properties an alternative procedure must be used—the cost method of valuation. The cost method, like the other two, requires the use of market data, specifically material costs and wage rates rather than sales or rents. These market data are then analyzed in order to provide the costs of hypothetical properties that are acceptable substitutes for the properties to be valued. The estimates of market value for the subject properties are based on comparisons between these and the hypothetical substitutes. It can be seen that the cost method of valuation is the least direct means of estimating the market value of property.

The usual rationale for this method is that an individual will not pay more for a property than it would cost him to acquire a similar property that is an acceptable substitute for the property he wants to purchase. Many valuators would extend this 'principle of substitution' and assert that, since this principle applies to all

potential purchasers, the cost method of valuation sets an upper limit of value. Viewed from this angle—the demand for real property—the term 'cost' refers to cost of acquisition and the cost method of valuation is merely an adaptation of the comparative sales method of valuation.

An alternative theoretical justification for the cost method of valuation regards 'cost' as cost of production and is concerned with the supply of real property. When competitive industries, such as the construction and the land development industries, are in equilibrium, the price of the product will tend towards normal long run costs of production. Therefore, if the conditions of equilibrium in a perfectly competitive industry hold, cost of production will serve as an accurate indicator of the market value of the product.

There are serious difficulties inherent in both theoretical bases of the cost method of valuation. On the demand side, the principle of substitution holds only when the two properties are perfect substitutes for one another. Few properties are perfect substitutes for one another and in most instances the best that can be expected is similarity in terms of use, type of improvement and location. Consequently, the principle of substitution can be applied only in general terms and the statement that cost sets the upper limit of value is only an approximation of the actual situation. Acceptable substitutes may be more or less valuable than the property being valued.

With regard to the supply side, neither the construction industry nor the land development industry is perfectly competitive nor can it be determined when either is in equilibrium in the theoretical sense. Consequently, there is no assurance that costs of production are an accurate reflection of market value. They will generally be less than market value but may exceed market value, although the latter situation will be more temporary than the former.

Inasmuch as the usual rationale for the cost method of valuation is the concept of 'cost' as cost of acquisition, one would expect the techniques used to apply the method would be based on this concept. Such is not the case. The techniques of replacement cost and reproduction cost estimating are based on the concept of 'cost' as cost of production. The two concepts will provide similar value estimates only for new properties. The value estimates will be

identical only in a perfectly competitive economy. In fact, while cost of acquisition may establish an upper limit of value, cost of production is a useful indication of its lower limit.

Thus the major weakness of the cost method of valuation is the inconsistency between its theoretical justification (cost of acquisition) and the theory underlying the techniques used to apply it (cost of production). Having been noted, this inconsistency is ignored and the discussion of the cost method that follows will be based on the cost of production concept.

Even in theory, cost of production tends to approach market value only when the product is new. Any lag between the date of production and the date when market value is estimated weakens the relationship between the two. Thus a further weakness of the cost method of valuation is that, even under optimal conditions, it is applicable only to newly-developed properties. In order to apply the method to an older property depreciation—the difference between the value of the property and that of a hypothetical similar property—must be estimated. The concept of depreciation and the manner in which it can be measured is described in Chapter 6.

Although the cost method of valuation lacks both the theoretical justification and the accuracy of the comparative sales and income capitalization methods, it continues to be widely used. The major advantage of the cost method is that it can be applied to all buildings and to the development costs of land. This is particularly important for assessors who must value properties that are not involved in transactions.

Cost

A general definition of cost of production would be the total outlay required to obtain a continuous supply of a product. In relation to real property, cost of production includes wages, cost of materials, overhead (including a return on machinery and equipment) and normal profit. That is, it encompasses all normal expenses and charges that a firm has to meet if it is to remain in operation. Assessors must base their estimates of cost on those of the typical contractor and developer; otherwise, their estimates will reflect abnormal and temporary conditions. Firms where costs are significantly below the industrial average are earning excessive profits which will dis-

appear as new firms enter the industry. Conversely, firms whose costs are above average will not be able to compete with lower cost firms and will leave the industry.

Only three cost techniques are used to any great extent by assessors: replacement cost, reproduction cost and factored historical cost.

Replacement Cost is the cost of developing a property similar to the one being valued. In many instances, this similar property is hypothetical and incorporates current building materials and construction techniques in the cost estimate. Similarity of properties requires at least that the uses are the same, the buildings are of the same type and of equal area, and that the access of the site is comparable. The *Handbook of Cost Factors* incorporates the basic premises of replacement cost but modifies them in order to facilitate its application.

Reproduction Cost is the cost of developing a property in an identical fashion to the one being valued. In the case of recently-developed properties there will be little divergence between replacement cost and reproduction cost. However, for older properties there will be substantial differences between the two which result from changes in materials and construction techniques subsequent to the development of the property. Another reason for divergence is changes in tastes; for instance, masonry walls three feet thick and ceilings ten feet high are unnecessary and not wanted in a modern residential structure. Reproduction cost is less useful than replacement cost because it is difficult, if not impossible, to estimate the cost of reproducing older structures.

Factored Historical Cost is the recorded cost at the time of construction adjusted by an index of building costs to reflect current prices. This is the least useful of the three concepts, primarily because it is difficult to gather data for older buildings and to prepare an accurate index that reflects changes in quality and technique as well as in price.

Cost Estimating Techniques

In brief, there are three basic steps required when estimating market value by means of cost:

(i) Estimate the cost new of the building;

(ii) Estimate any depreciation of the building and deduct an allowance for depreciation from the estimated cost new;
(iii) Estimate for market value of the site.

Only the first of these steps is discussed in this chapter. As noted earlier, depreciation is dealt with in Chapter 6, and techniques for estimating the value of the site are described in the chapter on comparative sales analysis, Chapter 3.

The two techniques most commonly used to estimate the replacement cost new of an improvement are the classification method and the plane or segregated cost method. A third method, the quantity survey, which is used to estimate reproduction cost, is also discussed since the quantity survey is occasionally applied to buildings that cannot be classified adequately.

Classification Method — Description

This method of cost estimating provides the foundation of the *Handbook of Cost Factors*; it is based on the premise that the recorded costs of constructing a building can be applied to all similar buildings. The classification method finds its most widespread application in relation to residential buildings, but it can be applied equally efficiently to many types of commercial and industrial buildings. It is least useful when applied to special purpose buildings and older buildings where current construction costs are not relevant. This latter difficulty is overcome to a certain extent by the use of a local sales modifier.

The classification method fulfils the three requirements of a useful cost estimating technique employed in a mass appraisal programme, namely accuracy, ease of application and flexibility. With regard to accuracy and ease of application, the classification method is at least as efficient as other techniques and better than most. It is in terms of flexibility that the classification method has a clear advantage over other techniques. By classifying and rating buildings according to a few basic features, an assessor can compare buildings that superficially have little in common but are of comparable efficiency in providing services. Furthermore, by employing local modifiers, a classification system that uses costs gathered in one municipality at a certain time can be applied in any other municipality at a later date.

The basic features of the classification system incorporated in the *Handbook of Cost Factors* are present in all buildings. They are:

(i) Design type;
(ii) Character of construction;
(iii) Quality of construction;
(iv) Shape;
(v) Size.

These factors are described more fully in Appendix B as well as in the *Handbook*.

Design: Buildings are classified first according to the use for which they were originally designed. These broad classifications may then be divided into sub-classifications, for instance the residential classification might be broken down as follows: single family, detached, semi-detached, row housing, multi-residential. Classification according to original design is essential because the construction techniques, the type of material used in construction and the interior layout are influenced by the prospective use of the building. In addition, those buildings no longer used for their original purposes are generally subject to functional obsolescence.

Character of Construction: The factors considered under this classification are the type of framing (supporting columns and beams), walls, floors, roof structure and fireproofing of the building. Buildings are rated in four categories depending on the type of materials used in their construction.

Quality of Construction: Each category of construction characteristics is divided into several (generally ten) sub-classifications based on the quality of materials used and the workmanship employed. The considerations pertaining to quality of construction reflect only recent types of construction as it is virtually impossible to describe quality specifications for all types and vintages of construction.

Shape: Since the perimeter wall area required to enclose a given floor area varies with the shape of the building, cost per square foot of floor area is a function of building shape. Consequently, shape is another basis for classification. Square structures require the shortest perimeter per square foot of floor area and accordingly

have the lowest costs per square foot; next on the scale are rectangular buildings. Irregularly shaped structures, for example circular, are the most costly per square foot of floor area.

Size: The final basis of classification is size. Everything else equal, the smallest building in any of the previous four classifications has the highest cost per square foot of floor area. This inverse relation between size and square foot cost is due to the large element of fixed costs that do not vary directly with size. For example, heating, electrical fixtures and plumbing only increase marginally with increases in size. The second factor is related to shape; a given increase in size gives rise to a less than proportionate increase in perimeter wall. Whereas a square building of 400 square feet requires an 80 foot perimeter, a square building of 1,600 square feet requires only 160 feet of perimeter wall. A fourfold increase in area gives rise to a doubling in the perimeter.

Classification Method — Application

In order to estimate the cost new of a building by means of the classification system, the assessor must carry out four distinct operations.

The initial step is to select the basic rate which should be applied to the building. Regardless of the cost estimating technique used, it is time-consuming and difficult to accumulate adequate data upon which to develop these rates. Fortunately, for those who use it, the appropriate rates are provided in the *Handbook of Cost Factors.* The rate that should be used depends on how the building is classified in terms of design, character of construction, quality of construction, shape and size. Once this has been done, the assessor selects the appropriate rate from the *Handbook* and applies it to the area of the building.

Secondly, there are some features of a building that cannot be incorporated into the classification system. These so-called additives are identified, measured (where necessary) and costed by applying the relevant rates from the *Handbook*. Among those building features considered as additives are heating, fireplaces and porches.

The third step, after calculating the basic cost of the building and the costs of the additives, consists of adding the two together to

provide an estimate of the cost to construct a hypothetical building, similar to that being valued, in Metropolitan Toronto in the base period. This cost is not an estimate of the replacement cost new of the building, it simply shows what it would have cost to construct a similar building in Metropolitan Toronto in 1962 or whatever the base period may be.

Finally, the building cost estimate is adjusted by the local sales modifier to provide an estimate of the market value new of the building.[1] At no time does the assessor who uses the *Handbook of Cost Factors* estimate the current replacement cost new of the building. He estimates the market value new of the building.

In the case of buildings that have suffered some loss of value or have benefited from an increase in value, an allowance for any difference in value must be made. After this allowance is made, the assessor uses the adjusted figure as his estimate of the market value of the building in its current condition. The market value of the entire property is estimated by adding the estimated market value of the site to the estimated building value.

The Plane Method

This technique is a compromise between the building classification method and the quantity survey. While it lacks the general applicability of the former, it does not require the refined analysis inherent in the latter. The plane method visualizes a building as the sum of its various components, i.e. as a set of construction planes, each of which are costed as complete units. The costs applicable to the various planes, e.g. roof, footings and foundations, exterior wall, etc. include the costs of installation as well as of materials. Despite the increased accuracy that the plane method provides when used by a qualified cost estimator, it is not appropriate for a mass appraisal programme. Not only does it lack the flexibility of the classification method; it is more time-consuming to apply. However, elements of the plane method are incorporated into the *Handbook of Cost Factors* to cost those features of a building not consistent with classification.

[1]The local modifier and the manner in which it is constructed are described in Appendix C.

The Quantity Survey

The quantity survey is used to estimate the reproduction cost rather than the replacement cost of a building. It requires a detailed inventory of all direct and indirect costs that are incurred in the construction of a building. While the quantity survey is precise, in that each element of the building is identified and costed separately, it is not a reliable indicator of market value. It should only be applied to those buildings for which there is no active market and which the assessor is confident would be replaced by identical structures if they were destroyed.

DEPRECIATION

In general, developed properties lose value over time, both in relation to their original market value and in relation to the market value of other properties. Unfortunately, there is no consistent relationship between loss of value and the age of a property; indeed, it is possible for properties to increase in value over time. The market value of a property will equal its original market value only if the improvement is new and, assuming the improvement is destroyed, the demand for the property is such that it will be redeveloped with an identical improvement. Whenever either of these conditions does not hold, the current market value of a property is something other than its original market value. If the property falls in value, it is said to be subject to depreciation; if it increases, to appreciation.

The basic meaning of depreciation is 'lowering of value'; but for assessment purposes a more accurate definition is 'difference in value'. Specifically, depreciation is the difference between the market value of a property in its actual condition and the market value of a hypothetical similar property developed with a newly-constructed improvement. For the hypothetical property to be considered similar, the site must be similar in location, size and shape to the actual site, while the improvement must be similar in type of construction, quality of construction and area to the actual improvement. The market value of the hypothetical property is the sum of the market value of a vacant similar site and the market value new of the similar improvement adjusted by the local sales modifier. This definition of depreciation precludes any necessity for the assessor to determine recorded actual costs of construction of an older building or to determine current construction costs in the municipality; the market value new of the hypothetical improvement can be estimated from the *Handbook of Cost Factors.*

Causes of Depreciation

There are numerous reasons why properties lose value but, for all intents and purposes, these can be classified under one of three headings: physical deterioration, functional obsolescence or economic obsolescence.

Physical Deterioration

As a building ages and the materials used in its construction wear out, it loses value. The physical deterioration of a building is influenced by a number of factors, the more important being:

(i) The quality of materials used;
(ii) The natural elements to which it is exposed;
(iii) The manner in which it is used;
(iv) The amount of maintenance given to it.

Although physical deterioration is generally more apparent than other causes of depreciation, its effect on property values is, in most instances, much less than obsolescence, either functional or economic.

Functional Obsolescence

A building that has suffered little from physical deterioration may nevertheless lose value because it has not been designed or constructed in accord with current tastes of investors. It has become functionally obsolete and sells at a discount which reflects inconvenience that may be caused by:

(i) Inadequacy or superadequacy of structural features;
(ii) Unpopular architectural style or interior design;
(iii) Outmoded equipment.

Since tastes and technology both change over time, older buildings generally suffer from functional obsolescence as well as physical deterioration and it is difficult, if not impossible, to allocate depreciation of the building between the two.

Economic Obsolescence

Depreciation of a property may apply not only to its improvements but also to the site if the location is unsuitable, or less suitable than it was previously, to its current use. In such instances the

property is said to be suffering from economic obsolescence. Despite the fact that property use is determined by the nature of the improvements, it is accepted that some depreciation resulting from economic obsolescence is reflected in lower land values. Economic obsolescence, which may affect entire neighbourhoods as well as individual properties, encompasses all those causes of depreciation external to the property or neighbourhood. Examples of such factors are:

(i) Shifts in population;
(ii) Deterioration of community facilities;
(iii) Proximity of inharmonious or obnoxious development;
(iv) Legislative restrictions.

Depreciation and Recession

Since real property is an important element in our national wealth, property values reflect changes in the level of economic activity. If the economy suffers a recession to the extent that there is widespread unemployment or a decline in personal incomes, this will lead to a general downward movement in property values. Such a movement should not be confused with depreciation, which shows relative losses in value for particular properties or neighbourhoods. In periods of recession assessors may have to lower all property values in addition to making allowances for the depreciation of particular properties.

Types of Depreciation

Curable versus Incurable Depreciation

It is possible to allocate the effects of physical deterioration and functional obsolescence between that which is susceptible to improvement, i.e. curable, and that which cannot be feasibly removed, i.e. incurable. Obviously, these terms are relative since it depends on the individual desires and incomes of owners and occupants as to what should be considered curable or incurable depreciation. Therefore, the distinction between the two can only be arbitrary; if a distinction is made, it should reflect the actions of typical property owners. For example, if most owners feel that it is not worthwhile to replace obsolete plumbing in older houses, such plumbing must be classified as incurable depreciation even though some owners may replace it with new pipes and modern fixtures.

The depreciation resulting from economic obsolescence is, so far as individual properties are concerned, regarded as incurable. Although some causes of economic obsolescence such as proximity to heavy traffic flows or excessive noise may be removed by community action; it is generally beyond the power of any individual owner to control the economic obsolescence that affects his property.

Normal versus Abnormal Depreciation

All causes of depreciation previously discussed, both curable and incurable, may be applicable to any property. The depreciation that results from the presence of any of those factors constitutes normal depreciation. However, particular properties may be subject to depreciating factors not applicable to other properties. These unique causes of depreciation, which may be curable or incurable, lead to abnormal depreciation. Examples of curable abnormal depreciation might be damage from flooding or from fire; examples of incurable abnormal depreciation might be errors in design of construction, or a property that is to be demolished as part of a road widening project. Whereas normal depreciation is relatively easy to discover and to measure—it will be reflected in any depreciation table; abnormal depreciation will be discovered only by a careful inspection of each property. The proper allowance for abnormal depreciation equals the cost to remove the source of depreciation to the point where it is in the same condition as the rest of the property. Thus the allowance for abnormal depreciation in a property that suffers from normal depreciation will be less than the cost of completely removing the source of abnormal depreciation.

Example:

Given:	(i) Market value new of the property	$80,000
	(ii) Allowance for normal depreciation	20%
	(iii) Cost to cure abnormal depreciation	$10,000
Procedure:	(i) Market value, with normal depreciation is $80,000—($80,000×.2)	=$64,000
	(ii) Adjustment for abnormal depreciation is $10,000—($10,000×.2)	=$8,000
	(iii) Market value, with total depreciation is $64,000—$8,000	=$56,000

Measuring Depreciation

Effective Age versus Chronological Age

Although the relationship between depreciation and age is neither direct nor constant, the independent variable in any depreciation table is always age. Rather than use chronological age, it is preferable to relate the depreciation of a property to its effective age. Effective age is based on the present condition of the property and its estimated remaining useful life rather than on the date of construction and the property's estimated physical life. It equals the difference between the estimated average useful life of a property and its estimated remaining useful life. The concept of effective age is illustrated in the following two examples.

Example #1

A building of a type that has an average useful life of 60 years was constructed in 1930. In 1966 the building was renovated to such an extent that its remaining useful life was estimated to be 50 years. Thus, after the renovation the building's effective age is 10 years whereas its chronological age is 36 years.

Example #2

It is learned in 1966 that a house constructed in 1960 with an estimated useful life of 30 years is to be demolished in 1967. In 1966 the effective age of the house is 29 years as opposed to a chronological age of only 6 years.

The concept of effective age enables assessors to recognize that many buildings remain in use much longer than their estimated average useful life. This situation is explained by the principle of extended life which states that: the longer a building remains in use, the better are its chances of remaining in use longer than its average useful life. In more concrete terms, the chances of a thirty-year-old house lasting fifty years are much greater than those of a similar house only three years old.

Percent Good

There are a number of ways in which property value can be shown on a depreciation table. In the past the most common method of showing it has been to show percent depreciated as the dependent variable. Current practice is to show percent good, the reciprocal of percent depreciated. This method is preferred because it:

(i) Allows the assessor to regard the property in a positive rather than a negative way, that is, he looks for the remaining assets of a property rather than at its liabilities;

(ii) More practically, the use of percent good saves one arithmetic operation when estimating value.

The most accurate way to measure the depreciation of a property is to estimate the difference between the market value of the property and the market value of a similar newly-developed property. The difference is a measure of the market's estimate of the depreciation of the property. An alternative method, which can be used for income-producing property, is to compare the difference between the capitalized incomes produced by the property and a newly-developed similar property. Again the difference is a measure, although less direct, of the market's estimate of the property's depreciation. However, most assessors who have sufficient data to use either of these methods will use the comparative sales or income capitalization methods of valuation in which case there is no necessity for measuring depreciation.

Therefore, assessors must devise another method to measure depreciation—one that does not depend so heavily on data needed for the comparative sales or income capitalization methods of valuation. Unlike appraisers, assessors are not able to devote sufficient time to each property that they can make a detailed examination of each. They must use some method that can be applied more efficiently but does not compromise the need for accuracy. The answer to this dilemma is the use of depreciation tables, plus an annual inspection of each property to check the accuracy of the tables and to discover any abnormal depreciation not covered by the tables. The depreciation table shows the ratio of the market value of a property to its market value new at a given age.

Depreciation tables are, to a certain extent, compromises between ease of preparation and accuracy. Some, such as those based on allocation of cost, are easy to prepare but lack accuracy; others, based entirely on market sales, are accurate, but difficult and time-consuming to prepare. The interests of equity are served so long as depreciation is measured uniformly for all properties valued by the cost method of valuation.

While it is theoretically possible to prepare tables that account for all normal depreciation regardless of source, depreciation tables generally measure only normal physical deterioration and functional obsolescence. In practice, there are never adequate data to measure

depreciation over a neighbourhood or any area sufficiently small that a table based on those data could include economic obsolescence. Economic obsolescence, as well as any abnormal depreciation, must be estimated on the basis of personal inspections.

In many instances the difference in sale price between a property with normal depreciation in the neighbourhood subject to economic obsolescence and a similar property in an area not affected by obsolescence is regarded as the market estimate of economic obsolescence. An amount equal to this difference is allowed for economic obsolescence on all properties in the neighbourhood. The difference in rentals between similar properties in and out of the neighbourhood can be capitalized and applied in a similar fashion as an allowance for economic obsolescence.

If the allowance for economic obsolescence must be allocated between land value and building value, it can be done on the basis of the ratio of land value to building value.

Example:

Given:	Neighbourhood A subject to economic obsolescence	
	New house in A sold for	$17,000
	Residential lots similar to those in A selling for	$5,000
	Cost of constructing a house similar to that in A	$15,000
	No normal depreciation applicable to new house in A	
Procedure:	Allowance for economic obsolescence in neighbourhood A	
	$=\$15,000+\$5,000-\$17,000$	$=\$3,000$
	Ratio of land value to building value	
	$=\$5,000:\$15,000$	$=1:3$
	Land value in A including economic obsolescence	
	$=\$5,000-\frac{\$3,000}{4}$	
	$=\$5,000-\$750$	$=\$4,250$
	Building value in A including economic obsolescence	
	$=\$15,000-(\$3,000-\$750)$	
	$=\$15,000-\$2,250$	$=\$12,750$

On the basis of this example the allowance for economic obsolescence in neighbourhood A is $3,000 per property, of which $750 is allocated to the land and $2,250 to the building. If the value of

land in neighbourhood A can be determined directly from sales, the allowance for economic obsolescence will be a deduction of $2,250 from the market value, with normal depreciation, of each building.

Percent Good Tables—Preliminary Work

Whether or not they reflect their conclusions in a depreciation table, all experienced assessors should have an idea of the rate at which properties in their jurisdiction lose value. Depreciation tables are essentially short-form tabulations of depreciation rates. The data required to construct depreciation tables include:

(i) Estimated average useful life of the improvement on the property, in order to determine the period of time over which depreciation tables should be applied;
(ii) The residual, or scrap, value of the improvement at the end of its useful life, in order to determine the total amount of depreciation that may be applied to a particular type of improvement;
(iii) The ratio of market value of the improvement to replacement cost new at various intervals during the estimated useful life of the improvement, in order to determine the rate at which the improvement loses value during its useful life.

The estimated life of the property is based primarily on the anticipated physical life of the improvement; the scrap value can be estimated on the basis of interviews with contractors who demolish buildings. The data required for estimating the ratio of market value of the building to its replacement cost new are set out below.

(i) Record all real property sales that reflect market value;
(ii) Estimate the market value of the building by deducting an allowance for land values from the building;
(iii) Estimate the effective age of each building;
(iv) Estimate the replacement cost new of each building and adjust this cost by the local sales modifier;
(v) Calculate the ratio of building value to adjusted replacement cost new. This ratio provides a measure of the percent good of each building at various effective ages.

Once the ratios for all the buildings have been calculated, the buildings must be classified; the classification must be made in such a manner that all buildings subjected to the same depreciating influences are grouped together. There are no absolute or universal criteria for classifying buildings, as different market conditions, varying types of municipal development, and so on, will determine what

criteria are most significant. Among the more important criteria relating to physical deterioration are:

(i) Use;
(ii) Type of construction;
(iii) Exterior wall material;
(iv) Present condition.

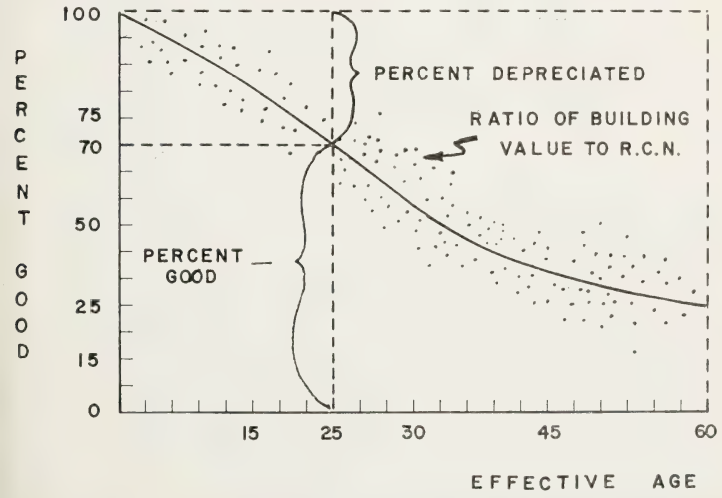
Obsolescence, both functional and economic, will be reflected by these four factors. Other factors that may influence obsolescence include:

(i) Whether or not the building conforms with current zoning regulations;
(ii) Proximity to noise and other nuisances;
(iii) Access to community facilities;
(iv) Ratio of building value to land value.

Once the criteria for classifications have been selected, it remains only to group the data, tabulate them and plot them on a scatter diagram. A completed scatter diagram, from which a percent good table can be calculated, would resemble the schedule set out below.

FIGURE 4

PERCENT GOOD SCHEDULE TYPE Z BUILDINGS



PERCENT GOOD TABLES—APPLICATION OF THE PERCENT GOOD SCHEDULE

The curve in the diagram is the best approximation of the data; it may be fitted by eye or by the use of some statistical technique such as regression analysis. The chart shows:

(i) Type Z buildings have an estimated average useful life of 60 years;

(ii) Their scrap value at the end of sixty years is 25 percent;

(iii) The buildings lose value most rapidly between the effective ages of 15 and 45 years.

When the percent good curve has been determined, it is relatively simple for the assessor to estimate depreciated value of any type Z building.

The procedure is as follows:

(i) Estimate the effective age of the building;

(ii) From the curve, calculate the percent good factor at that age;

(iii) Estimate the modified replacement cost new of the building;

(iv) Apply the percent good factor to the modified replacement cost new;

(v) Deduct any additional allowance for abnormal depreciation.

Example:

Given:	Effective age	= 25 years
	Replacement cost new	=$30,000
	Cost to replace abnormal depreciation	=$ 8,000
Procedure:	Percent good at 25 years	= 70%
	Building value with normal depreciation	=$30,000×0.7
		=$21,000

There are two procedures that may be used to allow for abnormal depreciation.

I. Deduct a further allowance from depreciated building value.

Since the building is 70% good, the same percent good factor is applied to the cost of replacing abnormal depreciation.

∴ allowance for abnormal depreciation is

$8,000−($8,000×0.3)

= $8,000−$2,400 =$ 5,600

alternatively, allowance for abnormal depreciation is

$8,000×0.7 =$ 5.600

Thus, fully depreciated value of the building is

$21,000−$5,600 =$15,400

II. Change the effective age of the building to reflect the abnormal depreciation.

Assume:	the assessor adds three years to the effective age in order to reflect abnormal depreciation.	
Then:	effective age is	=28 years
	percent good at 28 years is	= 52%
	building value with total depreciation is $30,000×0.52	=$15,600

The discrepancy between the two methods of calculating the allowance for abnormal depreciation reflects the difficulty of estimating depreciation, either normal or abnormal. Any estimate of depreciation, regardless of the quality of the data used, is based on the assessor's judgment and experience. It is not reasonable to expect that data will always be interpreted in an identical fashion, even by one individual. The best that can be expected is that the data will be interpreted in a logical and consistent manner.

It is unlikely that any percent good table will last indefinitely and the assessor should periodically check its accuracy against sales. The life expectancy of any percent good table will vary with changes in market condition and with changes in technology and tastes, and will differ among municipalities. The best insurance for the efficient application of a percent good table is the common sense and experience of the assessor.

Cost Allocation Techniques for Measuring Depreciation

In some instances there may not be sufficient sales to warrant the construction of percent good tables based entirely on sales. However, there are cost allocation tables, originally derived by engineers and accountants, that may be used by assessors. Although easy to apply, such tables are not perfect substitutes for tables based on market data and should be used with care. The three major disadvantages of cost allocation tables are:

(i) They are based on the concept of depreciation as a loss in value over a period of time rather than a difference in value at a given point in time;

(ii) They were originally devised as a method of allocating historic recorded costs rather than estimating current market value;

(iii) They overemphasize the relationship between depreciation and age.

Cost allocation tables are used in spite of these drawbacks because:

(i) They are easy to apply;
(ii) They provide a degree of uniformity if used on all buildings valued by means of the cost method;
(iii) A depreciation schedule originally based on sales may resemble a schedule derived mathematically so closely that the latter provides a reasonable approximation of it.

The use of cost allocation-type depreciation tables does not ease the work load of assessors as much as one might expect. They must continue to estimate the average useful life and the scrap value of each class of building as well as to estimate the effective age and replacement cost new of each building they value.

The three most commonly used cost allocation techniques for measuring depreciation are the straight-line premise, the broken-line premise and the declining balance premise.

(i) *The straight-line premise* assumes that a building depreciates by equal amounts each year. In general, it is assumed that this annual loss in value equals a percentage of the building's replacement cost new.

Given:	(i) Replacement cost new	=$10,000
	(ii) Estimated useful life	=25 years
	(iii) Scrap value	=0
Procedure:	(i) Total depreciation is 100% of $10,000	=$10,000
	(ii) Annual depreciation rate $=\frac{100}{25}$	=4% p.a.
	(iii) Annual depreciation allowance $10,000×.04	=$400
	(iv) depreciated building value at end of 1st yr.=$10,000−$400	=$9,600
	(v) Depreciated building value at end of 2nd yr.=$9,600−$400	=$9,200
	.	
	.	
	.	
	.	
	(xviii) Depreciation building value at end of 25th yr.=$400−$400	=0

(ii) *The broken-line premise* assumes that a building depreciates by varying amounts during its lifetime but that the annual losses in value are equal for several years before changing. For instance, it might be assumed that a building with a sixty year useful life depreciates at

the rate of 3% of replacement cost new for the first 25 years; at 4% for the next 15 years and at 2% for the last 20 years.

(iii) *The declining balance premise* assumes that the building does not have a finite life and that the annual loss in value declines each year. In most instances the annual loss in value is expressed as a percentage of the building's depreciated value.

Example:

Given:	(i) Replacement cost new	=$10,000
	(ii) Annual depreciation rate is 4% of depreciated value.	
Procedure:	(i) Depreciated building value at end of 1st yr.=$10,000−$10,000×.04 =$10,000−$400	=$9,600
	(ii) Depreciated building value at end of 2nd yr.=$9,600−$9,600×.04 =$9,600−$384	=$9,216

Other cost allocation techniques include the common denominator premise, the sinking fund premise, the annuity premise and the years' digits premise. These are not discussed as they have no substantial advantages over those already noted and are not used to any great extent by assessors.

Appreciation

When a property increases in value in relation to similar properties over a period of time, it is said to be subject to appreciation. Appreciation does not necessarily mean that the property increases in value above its market value new; so long as its value rises above an earlier level, it has appreciated. That is, a property that has appreciated in value may still be worth less than its market value new; it is subject to depreciation as well as appreciation.

Appreciation in value is generally the result of the property's location, although it may result from other factors. For instance, in Toronto row houses that were built about 1900 gained new popularity as town houses in the 1960's and sold for much more than they did between 1945 and 1960. It is as much the architectural style of these town houses as their location that accounts for their popularity.

So far as the locational aspects of appreciation are concerned, they can be regarded as the counterpart of the forces that lead to economic obsolescence. These appreciating influences include:

(i) New or expanded transportation facilities that improve access of the property;
(ii) Improvement of adjacent or neighbouring land;
(iii) Diminution or removal of health hazards, sources of noise or other nuisances;
(iv) Changes in legislation that permit more profitable development of the property;

It does not necessarily follow, if property prices are being bid upwards, that appreciation is present, i.e., that values are changing relative to other properties. In some instances, the higher prices are caused by inflation, in which case all prices are rising. If inflationary conditions are present, assessors may have to make general increases in their assessments. They must still be aware of appreciation and reflect it in their valuation wherever necessary.

The most efficient way to reflect property appreciation in a valuation is to lower the property's effective age.

Chapter VII

DEMONSTRATION APPRAISALS

In this final chapter the three methods of valuation are illustrated by showing how they can be applied to various types of property. There are four demonstration appraisals—one for each method of valuation and a fourth that utilizes all three methods.

These appraisals are as follows:

(i) Comparative sales—residential;
(ii) Income capitalization—commercial;
(iii) Replacement cost less depreciation—shopping centre;
(iv) Combined—rural.

Residential

The property valued by means of the comparative sales method of valuation is a single family residential property located at 1214 Nova St., York, Ontario.

Legal Description

The property is legally described as Lot 46, Registered Plan 594, City of York, County of Toronto, Ontario.

Neighbourhood Analysis

The following analysis need not be made for every property. It is one of the records that would be prepared by an assessor when preparing an inventory of the neighbourhoods in his jurisdiction. Once a neighbourhood analysis is completed it becomes reference data for the valuation of all the properties located in the neighbourhood.

Physical environment: The property is located in a neighbourhood composed of three subdivisions R.P. 594, R.P. 584 and R.P. 576. The neighbourhood is located in the north section of the city. The limits of the neighbourhood are:

(i) On the south, an older development;
(ii) On the east, agricultural land;

(iii) On the north, unimproved residential land;

(iv) On the west, rough terrain zoned as recreational park land.

The soil is sandy and well drained with good load-bearing qualities.

The ground is gently rolling and the attractiveness of the area is enhanced by the large trees saved by the developer.

The area is zoned for single family dwellings with no apparent violations in the three subdivisions. The homes are moderately priced and are well maintained and attractive. There is room for expansion to the east and to the north of the area. In addition there are some lots available in the neighbourhood as Plan 594 is approximately 90% built up, and the other two from 70% to 80% developed.

The main street of the city runs north and south through the neighbourhood. This does not create a traffic problem for the area as the street is the extension of a district road which serves only the neighbourhood and the farms north of the city. The neighbourhood is free of nuisances and obnoxious odours.

The neighbourhood receives most municipal services. As well as fire and police protection, all properties are served by hydro, water, sanitary sewers and storm sewers. The streets are paved, with curbs. Sidewalks are built on one side of the streets only, except on the main street where both sides have sidewalks. There are two playgrounds within the neighbourhood and a park on the west side. Public transportation is provided on the main street with a bus every thirty minutes.

Public and separate schools are located in the neighbourhood. Four churches of the major denominations are easily accessible by car or public transportation.

Shopping facilities of the neighbourhood type are available in the northeast section of the city. Other shopping facilities of the regional type are accessible by car or public transportation. These shopping plazas offer medical and dental services also.

The development of the area has been steady but not rapid and the majority of the residents in the neighbourhood own their homes. Approximately ninety percent of the existing houses were built by contractors, while the remainder were built by the original owners. Only three houses are currently vacant.

Thirteen of the lots in R.P. 594 are vacant but there are forty vacant lots in the rest of the neighbourhood. These lots are being purchased by individuals who wish to build their own homes or have them built to their specifications. The neighbourhood is considered to be a sound area for investment by mortgage institutions.

The neighbourhood has a population of approximately 2,400 people. The majority of the working population are employed in factories located on the south and east sides of the city. The city, with a population of 60,000, is renowned for its farmers' market and its beautiful gardens. At the present time the entire area enjoys a sound economy.

Government regulations and taxes: The successive councils of the city have passed reasonable legislation in the areas of planning, zoning and sanitary regulations. This legislation is efficiently administered and has had no significant impact on property values.

The residents of the neighbourhood generally feel they get benefits commensurate with their property taxes. The amount of taxes paid on residential properties in this neighbourhood varies from $210 to $300.

Personal characteristics of the residents: The occupations of the area residents vary from those of the skilled mechanic to the semi-professional person. Incomes, for the most part, range from $5,000 to $10,000.

The residents' desire to maintain the quality of their neighbourhood is reflected in the care they give their properties.

Location and Site Analysis

Lot 46, R.P. 594 is rectangular in shape and measures 65 feet by 110 feet. It is located two blocks west of Main Street on a paved road four blocks in length which is devoted entirely to residential use.

The lot is practically level with a gentle slope to curb grade. There is easy access to public transportation (2 blocks), to schools (1-3 blocks), churches (2-3 blocks), shopping facilities (3 blocks) and employment (downtown 3-5 blocks). The lot is fully serviced and all utilities are connected.

BUILDING ANALYSIS

The site is improved with a ten-year-old single family, brick veneer one-storey residence. The building is irregular in shape with the main portion 40 feet by 28 feet and the wing five feet by nine feet. The total area is 1,165 square feet.

A detached one-car frame garage is located on the west side of the house. The garage measures 14 feet by 20 feet with an area of 280 square feet.

The building has the following character of construction and quality of construction characteristics:

foundation:	Eight foot concrete wall 10 inches thick on 18 inch by 8 inch footing.
exterior walls:	Standard brick veneer.
floors:	Second grade hardwood on diagonal shiplap subflooring on 2 inch by 8 inch; 16 inch o.c. joists in three bedrooms, dining room and living room. The kitchen and bathroom floors are of light colour vinyl asbestos tile. Concrete floor in basement.
roof:	Asphalt shingles on T. and G. deck on 2 inch by 6 inch, 16 inch o.c. rafters. There is a two foot overhang around the hip roof.
sash and doors:	The living room window is double glazed on a wood frame. Other windows are frame, double hung, painted. The doors are painted fir.
interior finish:	Lath and plaster on walls and ceilings. The trim is softwood, painted. The bathroom walls are painted and tiled over the tub.
cabinets and built-ins:	One clothes closet in each bedroom. One medicine cabinet in bathroom. One linen closet. The kitchen cupboards are built of pine and painted. The counter top is arborite as is the back splash.
plumbing:	Standard white fixtures in bathroom, consisting of basin, toilet, bath tub and over-the-tub showerhead. One single compartment kitchen sink. Laundry tubs in basement.
heating:	Central forced air, oil fired furnace.
electrical:	Cable wiring. Average number of outlets. Door chimes. The house is wired for heavy duty range and clothes dryer.
garage:	Concrete slab floor. Wall framing is of 2 inch by 4 inch studs, 16 inch o.c. Exterior finish of good quality siding. Asphalt shingles on shiplap on 2 inch by 4 inch, 16 inch o.c. rafters. Two windows. One pedestrian door and one overhead door. Average wiring.

This information would be set out in an appraisal card such as that in Figure 5.

FIGURE 5

MUNICIPALITY OF: CITY OF YORK
COUNTY ~~XXXXXX~~ OF: TORONTO
LOT DESCRIPTION: LOT 46 - R.P. 594
ROLL NUMBER:
OWNER: JOHN GREEN
TENANT:
PROPERTY ADDRESS: 1214 NOVA STREET
SHEET 1 OF 1 SHEETS

BUILDING DESCRIPTION

CLASS & SHAPE	FOUNDATION	FLOOR JOISTS	HEATING	WIRING	EXTERIOR	ROOF
ALL D/C-6-B	X CONCRETE	X 1st 2" x 8" 16"	X CENTRAL	K.T. COND.	X BRICK Cl.Fc.	FLAT /4 PITCH
1ST	REIN. CON.	2nd " x " "	HOT WATER	B.X. X CABLE	BLOCK	GABLE /4
2ND	BRICK	3rd " x " "	STEAM	FIXTURES	SIDING " x "	X HIP 4 /4 1/4
	WOOD	X SUB-FLR.	RADIANT	FEW CHEAP		SHED /4
1 STOREYS	STONE	CON. SLAB	X FORCED	X AVG. X MED.	STUCCO	
SPLIT-LEVEL	POST. PIERS	X Shiplap-diag	GRAVITY	MANY SPEC.	X STONE	X CUT UP
			ELECTRICAL	FIREPLACES	SHINGLE	DORMERS
		X INSUL. CEILINGS			INSUL.	X RAFT 2" x 6" 16"
TYPE		X INSUL. WALLS	PIPELESS	Basm't	ROLL SDG.	GUTTERS.D.S.
USE DESIGN	BASEMENT	STRUCTURAL	HTRS.	1st.Flr		
X SINGLE X	X FULL PART	X FRAME		WINDOWS		AD. SHINGLE
SEMI-DET.	X CON. DIRT	X 2" 4" 16" E	FUEL Oil	X D.H. CSMT.	CONSTRUCTION	X ASPH. SHINGLE
DUPLEX	HEIGHT: 8'0"	X SHEATHING	CAPACITY	SLDG.	LIGHT	ROLL
APARTMENT		X K.B.Bd.	X ADQ INDQ.		SUB-STANDARD	TILE
	CRAWL SPACE	BLOCK		STORMS-SCREENS	X STANDARD	TAR & GRAVEL
	CON. DIRT	BRICK	AIR CONDIT.	ALUM WOOD	ABOVE STANDARD	
UNITS	HEIGHT:				SPECIAL	

RATING (F.G.A.F.P.)

COND.	ARCH. ATTR.	FUNC. PLAN	STORAGE SPACE Cupboard	STORAGE SPACE Closet	WORK-MANSHIP
A	A	A	A	A	A

YEAR BUILT	AVERAGE LIFE	NORMAL % GOOD R.E.L.	EFF.AGE	TABLE	% GOOD
1956	60	50	10	R-60	90

GENERAL REMARKS:

SPECIAL FEATURES: Heavy duty electric service, door chimes, and medicine cabinet in bathroom - A.B.C. 1/1/66

COMPUTATION SUMMARY

Assessor & Date: A.B.C. 1/1/66 Checked: D.E.			Assessor & Date: Checked:			Assessor & Date: Checked:		
TOTAL R.C.N.		$14,065	TOTAL R.C.N.			TOTAL R.C.N.		
LOCAL MODIFIER	103	14,485	LOCAL MODIFIER			LOCAL MODIFIER		
NORMAL % GOOD	90	13,035	NORMAL % GOOD			NORMAL % GOOD		
M.V. BLDG.		13,035	M.V. BLDG.			M.V. BLDG.		
LAND		2,000	LAND			LAND		
TOTAL		15,035	TOTAL			TOTAL		

ROOM & INTERIOR FINISH DETAIL

ROOMS	FLOORS B	1	2	3	FLOOR FINISH H	W	S	W	TI	LI	GRD	WALLS PL	DW	PA	CEILING PL	DW	TI
ALL	X	X			X						A	X					
ENT. HALL																	
LIVING		1															
DINING		1															
DEN																	
BED		3															
BTH																	
REC. ROOM																	
STGE.	1								X				X				X
KITCHEN		1							X								

DRAINBOARD 8 FEET Tile Form X ARB
SPLASH 10 INCHES Tile Form X ARB

PLUMBING DETAILS

TYPE: PR. X STD. SPEC.

Flr.	FINISH FLOORS	FINISH WALLS	FIXTURES T	B	BT	Colr.	Gra.	SHOWER ST	OT	GD	FINISH
1	Vyl.Ti	Pl	1	1	1		A	1			Cer.Ti

VANITY

TYPE	Flr.	NUMBER	MATERIAL	ADD.PLUMBG.
KITCHEN SINK	1	1	X	
LAUNDRY	B	1	X	
SLOP SINK				

CONSTRUCTION RECORD

PERMIT NUMBER	PERMIT FOR	AMOUNT	YEAR	REMARKS
1000	Dwell-Gar	11,500	1956	

D.M.A. - A.B. - R - 2A AUGUST 18/66

FIGURE 5

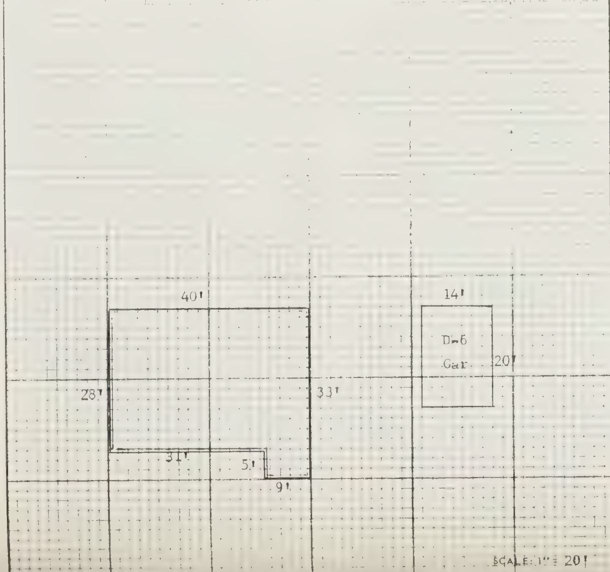
MISCELLANEOUS STRUCTURES

UNIT	FND.	HT.	CONS'T.	EXTER.	INTER.	ROOF	CEILING	FLOOR
Gar - D-6	Con		Fr	Lap	U/L	Gab	U/L	Con

BUILT-UP & ADJUSTED RATES

PORCHES			SIDING		
TYPE					
PLATFORM					
ENCLOSURE					
ROOF					
RAILING					
TOTAL					

BUILDING DIAGRAM



COMPUTATION

UNIT	SIZE	AREA	RATE	COST	SIZE	AREA	RATE	COST
1sty.Res-D/C-6-E	40x28	1120						
	5x9	45						
		1165	10.00	11,650				
Basement		1165	.84	980				
Heating		1165	.50	580				
Gar - D-6	14x20	280	3.05	855				
			TOTAL R. N.	14,065			TOTAL R. N.	

LAND DIMENSIONS

FRONTAGE	65'
RIGHT	110'
LEFT	110'
REAR	65'
AREA	7150

LAND SERVICES

X	ZONED	X	SIDEWALK
X	WATER	X	CURB
X	STORM SEWER	X	GUTTERS
X	SAN. SEWER	X	PAVEMENT
		X	ST. LIGHTING

TOPOGRAPHY

X	LEVEL
	SLIGHT SLOPE
	STEEP SLOPE
	LOW
	RAVINE
	WOODED

LAND DIAGRAM (IRREGULAR ONLY)

INDICATE NORTH

REMARKS:

COMPUTATION OF LAND VALUE

	YEAR	RATE			VALUE
PER FRONT FT.					
PER SQ. FT.					
SITE	1966				2,000

SALES & RENTAL INFORMATION

DATE	INSTR.NO	CONSIDERATION	REMARKS

Comparability of Properties

The property being assessed (Lot 46, R.P. 594) has not been involved in a transaction since 1959 although there have been a number of sales of developed properties as well as vacant sites in the neighbourhood during the previous twelve months.

There have been sales of five developed properties sufficiently like the subject property that they can be considered similar. All the comparable properties are located in the same neighbourhood as the subject property and have the same facilities and municipal services.

Table 5
ANALYSIS OF COMPARABLE PROPERTIES

Characteristic	Sale #1	Sale #2	Sale #3	Sale #4	Sale #5
Location	Lot 155 R.P.594	Lot 113 R.P.584	R.P.576	Lot 460 R.P.576	Lot 468 R.P.576
Year Constructed	1955	1954	1953	1955	1955
Area	1,200 S.F.	1,150 S.F.	1,125 S.F.	1,180 S.F.	1,150 S.F.
Classification	D6	D6	D6	D6	D6
Lot Size	67 ft by 109 ft	65 ft by 109 ft	65 ft by 115 ft	65 ft by 110 ft	66 ft by 109 ft
Differences from Subject Property	2 car fr. garage	nil	nil	finished bsmt.	nil
Net Adjustment	−$220.	nil	nil	−$1,200.	nil

In addition to the five developed properties, five sales of vacant lots were examined in order to estimate the value of the site of the subject property if it were vacant. The characteristics of the comparable sites are listed below in Table 6.

Table 6
ANALYSIS OF COMPARABLE SITES

Characteristics	Sale #6	Sale #7	Sale #8	Sale #9	Sale #10
Location	Lot 141 R.P.594	Lot 115 R.P.594	Lot 96 R.P.584	Lot 95 R.P.584	Lot 468 R.P.576
Frontage	67 ft.	65 ft.	66 ft.	65 ft.	66 ft.
Depth	105 ft.	110 ft.	100 ft.	110 ft.	109 ft.
Terrain	Similar	Similar	Slightly Inferior	Slightly Inferior	Superior
Access	Comparable	Comparable	Better	Better	Comparable
Services	Similar	Similar	Similar	Similar	Lacks Paved Roads
Net Adjustment	nil	nil	nil	nil	+$100.

Comparability of Transactions

The transactions selected from the total number of transactions in the neighbourhood were those that seemed typical for the area. In the case of the developed properties the transactions occurred between owner-occupants and prospective owner-occupants. All the properties were listed with real estate agents before being sold. Except for one sale to a speculator who has continued to hold the land vacant, all the sites were sold by a developer to prospective owner-occupants who have since constructed single family residences or are in the process of doing so.

There were three transactions—two of developed property and one of vacant land—for which the terms were adjusted to reflect what were felt to be non-typical methods of financing. These are recorded in Table 7.

Table 7
ADJUSTMENT OF TERMS OF TRANSACTIONS

	Sale 3	Sale 4	Sale 7
Terms of Sale			
Cash	$ 1,000.[1]	$ 2,000.	$ 1,000.
1st Mortgage	12,500.	12,900.	
2nd Mortgage		1,500.[2]	
Other			1,200.[3]
Net Adjustment	+1,000.	— 450.	— 100.
Adjusted Sale Price	$14,500.	$15,950.	$ 2,100.

[1]Forced sale and owner accepted abnormally low down payment.
[2]Second mortgage discounted by $450.
[3]Paid when construction started; discounted by $100.

Comparability of Market Conditions

The demand for the type of dwelling that predominates in the neighbourhood has been constant at a fairly high level for the past two years. As the sales took place in the previous twelve months, it is presumed that market conditions have not changed in that period. Therefore no adjustments in sale price to compensate for different market conditions have been made.

Summary and Estimate of Market Value

The information upon which an estimate of market value for the entire property, and for an allocation of value between land and building, can be made is summarized in Table 8.

TABLE 8

ESTIMATE OF MARKET VALUE: PROPERTY AND SITE

Sale	Date of Sale	Sale Price	Property Adjustment[1]	Transaction Adjustment[2]	Market Value
Sale 1	June/66	$15,300	−$220		$15,080
Sale 2	July/66	14,900	—		14,900
Sale 3	Dec./65	13,500	—	+$1,000	14,500
Sale 4	June/66	16,400	−$1,200	−$450	14,750
Sale 5	Aug./66	15,000	—		15,000
Sale 6	June/66	2,000	—		2,000
Sale 7	July/66	2,200	—	−$100	2,100
Sale 8	Jan./66	2,050	—		2,050
Sale 9	Apr./66	2,000	—		2,000
Sale 10	Jan./66	1,950	+$100		2,050

[1]See Tables 5 and 6.
[2]See Table 7.

The estimated market value of Lot 46, Registered Plan 594, City of York is $15,000. On the basis of vacant land sales it is estimated that the site of the subject property would, if it were vacant, sell for $2,000. The market value of the property is allocated between land and building on the basis of:

Land	$ 2,000
Building	$13,000

The date of valuation is November 15, 1966.

Commercial

The property to be valued by the income capitalization method of valuation is a one-storey masonry building, owned and occupied by Acme Clothing Ltd., a men's clothing store. It is located at 1140 Elm Street.

LEGAL DESCRIPTION

The property is legally described as Lot 12, Block A, City of York, County of Toronto, Ontario.

COMPARABILITY OF PROPERTIES

It is essential that properties which are to be valued by the income capitalization method of valuation be classified carefully so that proper comparisons can be made. The properties would be classified in the same manner as that set out in the first appraisal.

although the emphasis would differ reflecting the commercial, rather than the residential, use of the properties.

Processing Income

Evaluation of the rental agreement: Since it is owner occupied there is no lease involved with the subject property. However, an examination of leases for comparable properties indicates the following:

(i) The typical lease runs from two to five years;
(ii) The owner pays the property taxes;
(iii) The owner is responsible for decorating, repairs, etc.;
(iv) The owner is responsible for maintenance;
(v) The tenant pays all utilities.

Gross rent: There are four tenant-occupied properties similar to the subject property in the immediate vicinity. The rents paid by the tenants in these properties were analyzed in order to estimate a gross rent for the subject property. The rents were calculated on a front foot basis as the usable areas in each property varied considerably and there was no coherent pattern formed by the unit rentals.

Table 9

ANALYSIS OF MONTHLY RENTS

Property	Monthly Rent (per front foot)
1165 Elm St.	$21.45
1220 Pine St.	21.05
1011 Elm St.	20.25
1190 Elm St.	20.90

The median rent is $20.98 per front foot which is rounded to $21.00. Various owners and tenants who were interviewed agreed that a monthly rent of $21.00 per front foot was reasonable.

The subject property has a street frontage of 50 feet, thus the monthly rent estimate is $1,050 and the annual rent estimate is $12,600.

Calculation

Monthly rent per front foot	=$21	
Street frontage	=50 feet	
Monthly rent=$21×50	=$1,050	
Gross annual rent=$1,050×12		$12,600.

Vacancy and collection losses: The subject property suffers no losses from vacancies or problems of rent collection. Analysis of comparable properties indicates that an allowance of four percent of gross income is reasonable. The allowance can be allocated between vacancy and collection as follows:

Vacancy—1.5%;
Collection—2.5%
The total vacancy and collection loss is $504.

Calculation

Vacancy allowance	=1.5% of $12,600=$1.89	
Collection allowance	=2.5% of $12,600= 315	
Total vacancy and collection allowance		$504.

Effective gross income:

Calculation

Gross income	=$12,600	
Vacancy and collection loss	= 504	
Effective gross income		$12,096.

Expenses: The annual expenses incurred in the operation of the property are estimated to be $2,895. These are allocated as follows:

TABLE 10
ANALYSIS OF EXPENSES

Item	Amount
Fuel	$ 245
Electricity	240
Water	60
Janitorial Service	1,000
Insurance	250
Decorating	200
Painting	100
Repairs	800
Total	$2,895

The owner is not in the habit of establishing reserves for the replacement of capital equipment and it was not felt necessary to set them up for properties of this type.

Net income: The net income for the property is $9,201.

Calculation

Effective gross income	=$12,096	
Expenses	= 2,895	
Net income		$9,201.

Capitalization Rate

Yield rate: There were sufficient sales of comparable income properties so that it was possible to develop a yield rate from market data. Six sales were analyzed and a median yield rate of 5.96% was developed. This was rounded to 6%.

Table 11

MARKET DERIVATION OF A YIELD RATE

Property	Sale Price	Adjusted Net Income	Yield Rate
1165 Elm St.	$ 77,300	$4,745	6.14%
1220 Pine St.	104,300	5,705	5.47%
1011 Elm St.	101,600	4,980	4.90%
1190 Elm St.	90,900	5,565	6.12%
96 Maple St.	105,200	6,145	5.89%
937 Pine St.	112,800	6,800	6.03%

Median rate is 5.96% rounded to 6%

Amortization allowance: The amortization allowance for the property is estimated to be 2.5%.

Calculation

Average life	=50 years
Effective age	=10 years
Remaining useful life	=40 years
Amortization allowance	$=\frac{1}{40}\times 100=2.5\%$

Property tax allowance: The allowance for property taxes is estimated at 2 percent; it is based on a tax rate of 50 mills and an assessment-market value ratio of 40 percent.

Calculation

Mill rate	=50 mills
Assessment-value ratio	=40%
Property tax allowance	$=.05\times.40=.02=2\%$

Capitalization rate: The capitalization rate that should be applied to the amortized portion of the property is the sum of the yield rate, the amortization allowance and the property tax allowance, i.e., 6% + 2.5% + 2% = 10.5%.

The appropriate rate for that portion of the property that is not amortized is 8% (the sum of the yield rate and the property tax allowance).

FIGURE 6

OWNER Acme Clothing Ltd. OCCUPANT Acme Clothing Ltd. MUNICIPALITY York DESCRIPTION ROLL NO.

PROPERTY ADDRESS 1140 Elm Street COUNTY OR DISTRICT Toronto

INCOME

GROSS ANNUAL INCOME - 100% OCCUPANCY AT MARKET RENT

	MONTHLY		ANNUAL	
Apartment	:	X 12	:	
Store	: $1,050.	X 12	: $12,600.	
Office	:	X 12	:	
Warehouse	:	X 12	:	
Garage	:	X 12	:	
Parking	:	X 12	:	
Other	:	X 12	:	
1: TOTAL GROSS INCOME			:	$ 12,600.
Allowance for Vacancy			: 1.5 %	
Allowance for Collection Loss			: 2.5 %	
2: TOTAL LOSS		4 % X (1) 12,600.	:	$ 504.
3: EFFECTIVE GROSS INCOME			:	$ 12,096.
4: TOTAL ANNUAL EXPENDITURE (Page 2)			:	$ 2,895.
5: TOTAL NET INCOME		(3) - (4)	(I)	$ 9,201.

PROPERTY REVERSION TECHNIQUE

1. Shape of the Income Stream: Straight line declining
2. Capitalization Rate: 10.5 % or Factor: (F):
3. Capital Value of the Net Income
   (I ÷ R = V) $ 9,201. ÷ 10.5 % : $87,629.
   (I X F = V) $ X F : $
4. Reversionary Value of Property
   20 % of Capital Value (3) $: $17,526.
   or Land Value : $
5. P. W. of I 40 years @ 8 % : .0460
6. Present Worth of Reversionary Value
   (4) X (5) $ 17,526. X (F) .0460 : $ 806.
7. Capitalized Earning Ability of Property
   (3) + (6) $ 87,629. + $ 806. = $88,435. rounded to : $88,400.

CAPITALIZATION RATE

1. SUMMATION METHOD - Yield Rate

Safe Rate	:	%
Allowance for Risk	:	%
Allowance for non Liquidity	:	%
Allowance for Management	:	%
Yield Rate	:	%

2. BAND OF INVESTMENT - Yield Rate

Investment	% of Tot.	X Int.	Overall Rate
1st Mtge		X	
2nd Mtge		X	
Equity		X	
Yield Rate			

3. MARKET COMPARISON - Yield Rate (see Table VII)

1. Sale Price	$	
2. Net Income	$	
3. % Of Value to be Amortized % of Sale Price $	$	
4. Amortization Rate		%
5. Rate for Property Tax		%
6. Property Taxes % of Sale Price $	$	
7. Amortization Allowance (4)X(3) % X $	$	
8. Sum of Annual Allowance (6)+(7) $ + $	$	
9. Return after Taxes and Amortization (2)-(8) $ - $	$	
10. Yield Rate: I/V = R		
(9) ÷ (1) $ ÷ $		6.0 %

DATE:

4. RATE FOR TAXES

Assessment Percent of Market Value	: 40 %
Current Mill Rate	: 50 %
Rate for Taxes	: 2.0 %

5. AMORTIZATION RATE

Average Life	: 50 yrs
Effective Age	: 10 yrs
Remaining Econ. Life	: 40 yrs
Rate of Amortization 1/R.E.L. X 100	: 2.5%

CAPITALIZATION RATE

Rate for Taxes	: 2.0%
Amortization Rate	: 2.5%
Yield Rate	: 6.0%
Total Rate (R)	: 10.5%

REMARKS

ASSESSOR:

FIGURE 6

EXPENDITURES

CURRENT EXPENSES - PER ANNUM

GENERAL EXPENSES:	Current $	19 $	19 $	Adjusted $
Management				
Advertising				
Legal & Audit Fees				
Fuel				245.
Electricity				240.
Water				60.
Janitor				1,000.
1.TOTAL GENERAL EXPENSE			:	1,545.
FIXED CHARGES:				
Insurance				250.
Elevator Contract				
2.TOTAL FIXED CHARGES			:	250.
REPAIRS & MAINTENANCE				
Decorating				200.
Painting				100.
Broadloom				
Landscaping				
Repairs				800.
3.TOTAL REP. & MAINT.			:	1,100.
MISCELLANEOUS EXPENSES				
4.TOTAL MISC. EXPENSES			:	
TOTAL EXPENSES (1 + 2 + 3 + 4)			:	2,895.
TOTAL ANNUAL RESERVES FOR REPLACEMENT			:	
TOTAL ANNUAL EXPENDITURE (EXPENSES + RESERVES)			:	$2,895.

RESERVES FOR REPLACEMENT

UNIT	R.C.N.	LIFE	RECAPTURE	INTEREST	TAXES	TOTAL	ANNUAL CHARGES
5.TOTAL ANNUAL RESERVES							

PROPERTY RENTAL RECORD

UNIT	SIZE	TENANT	RENTAL BASIS	19 MONTHLY RENT AMT.	F.F.	S.F.	19 MONTHLY RENT AMT.	F.F.	S.F.

TYPE OF PROPERTY: MARKET RENT - F.F. $ S.F. $

Land Residual	Building Residual
1. Net Annual Income $	1. Net Annual Income $
2. Expected Return on Bldg. % of Bldg.Value $ $	2. Expected Return on Land % of Land Value $ $
3. Income Residual to Land Line 1 minus Line 2 $	3. Income Residual to Bldg. Line 1 minus Line 2 $
4. Capitalization Rate Yield Rate % Taxes % %	4. Capitalization Rate Yield Rate % Taxes % Amortization % %
5. Capitalized Value of Land (3) ÷ (4) $ ÷ % $	5. Capitalized Value of Bldg. (3) ÷ (4) $ ÷ % $
6. Capitalized Value of Property Land $ + Bldg $ $	6. Capitalized Value of Property Land $ + Bldg $ $

LAND VALUE: TOTAL: $ FRONT FOOT: $

PER ACRE: $ SQUARE FOOT: $

Market Value Estimate

The market value of the property is calculated by applying the property reversion technique.

Calculation

The reversionary value is calculated by deducting the estimated decrease in value over the property's remaining useful life from the capital value of the net income.

The estimated decline in value is 80% of the capital value of the income; therefore, the estimated reversionary value is 20% of the capital value of the income.

The anticipated shape of the income stream is straight-line declining.

Capital value of the net income	$=\frac{\$9,021}{10.5\%}$	=$87,629
Reversionary value of the property	=20%×$87,629	=$17,526
Present worth of the reversionary value	=$17,526×.0460[1]	=$ 806
The estimated market value of the property	=87,629+$806 =$88,435 rounded to $88,400	

The date of the appraisal is November 15, 1966.

Shopping Centre

The cost method of valuation is applied to a neighbourhood shopping centre located on York Road in the City of York.

Legal Description

The property is legally described as the North Half of Block A, Parcel No. 1867, City of York, County of Toronto.

Neighbourhood Analysis

The unique nature of each shopping centre makes a complete and detailed neighbourhood analysis for every shopping centre in a jurisdiction a prerequisite. The neighbourhood characteristics that should be examined are:

(i) The physical environment of the neighbourhood;
(ii) The number of families in the neighbourhood;
(iii) The purchasing power of the potential customers;
(iv) The amount of present and future competition.

A thorough analysis of the neighbourhood will reveal many of the factors affecting the value of the centre.

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[1]Present worth factor for a single payment to be received in 40 years when the rate of return is 8% is .0460. (Table 17, Appendix D, Page 156).

Area: The subject property is located in a neighbourhood approximately 1½ miles long by 1 mile wide. The neighbourhood is used for residential purposes. The only exceptions are four service stations and the centre itself.

The area is delineated by man-made boundaries. To the north is a limited access freeway. To the south the neighbourhood extends to Elm Street, another major traffic artery. The east and west boundaries are not as clearly defined as the others. However, the area appears to extend approximately ¾ of a mile on both sides of First Avenue.

The terrain is level and drainage is adequate. The load-bearing qualities of the soil are good as is indicated by the presence of high-rise apartment buildings. All services are installed and the area is well planned. Public parks and playgrounds are maintained for the residents. There are no industries in the neighbourhood. There are no detrimental factors such as smoke or odours affecting the neighbourhood. Public transportation runs regularly along First Avenue and York Road with stops in front of the centre.

The area is fully developed and there are few vacancies at the present time. The residential neighbourhood is made up of single family dwellings, semi-detached dwellings, row houses and high-rise apartment buildings. All the single family dwellings and most of the semi-detached dwellings are owner-occupied. As this area is one of the good residential locations in the city, rents are high. However, the lack of vacancies indicates the strong demand for the type of accommodation provided in the area.

Size of population: The shopping centre is located near a heavy concentration of population with approximately 550 families living in the market area. The apartment buildings are all within ¾ of a mile from the centre with the largest ones being located on York Road directly across the street from the centre.

Purchasing power of the potential customers: The annual income of the families living in the trade area varies from $7,000 to $20,000. The median income is $11,500.

Most of the shopping is done by the wife, primarily because of the accessibility of the centre.

Competing locations: One and one-half miles west of the centre on York Road is a community shopping centre. There is a regional

shopping centre located at the corner of Elm Street and Second Avenue approximately two and a quarter miles from the property. A third shopping centre, which brings some competition to the property, is located on Second Avenue north of the freeway.

As the area is fully developed and relatively new, no increase in competition is foreseen. The construction of a new centre in the neighbourhood would require a change in zoning laws and would also require the removal of numerous structures to clear the land.

Location and Site Analysis

Locational characteristics: The property is strategically located on York Road as it is readily accessible from any point in the neighbourhood. The residents living north of York Road have to come south to York Road or to Elm Street to get to one of the Avenues that lead to the downtown area and to other shopping centres. The residents to the south of York Road have to go east on Elm Street to get to Second Avenue or north to York Road and then west to First Avenue as there is no interchange at Elm Street and First Avenue.

Size of site: The area of the site is 3.5 acres, with a frontage of 400 feet on York Road.

Topography: The site is level and all parking areas are on one level.

Subsoil conditions: The load-bearing qualities are good. There are no adverse factors.

Municipal services: All the public utilities are available to the site.

Parking: The parking is adequate for a neighbourhood centre.

Valuation of the Site

NOTE: The valuation of a shopping centre cannot ordinarily be based on comparison with sales of commercial properties in the vicinity. The value of these other commercial sites depends on considerations other than those applicable to a shopping centre. They are detached sites and may still be good sites without providing parking at the same location. A shopping centre is an integrated group of stores surrounded by a parking lot. The shopping centre may be located outside a hamlet, a city or town and be in a good location or it may be surrounded by farm land or residential land and still enjoy a favoured location.

In this instance the value of the site was estimated as the sum of the land acquisition cost plus the cost of development. Since both these costs are ten years old, they have been adjusted to reflect

rising costs over that period. The adjustment factor reflects changes in the level of commercial real estate activity as well as increases in the cost of living.

Calculation

Cost of raw land (1956)	=$28,000	
Cost of services (1956)	= 17,500	
Total land cost	=	$45,500

The total adjustment factor is 20%. It consists of a cost of living index increase of 12% and an increase in the real estate market index of 8%.

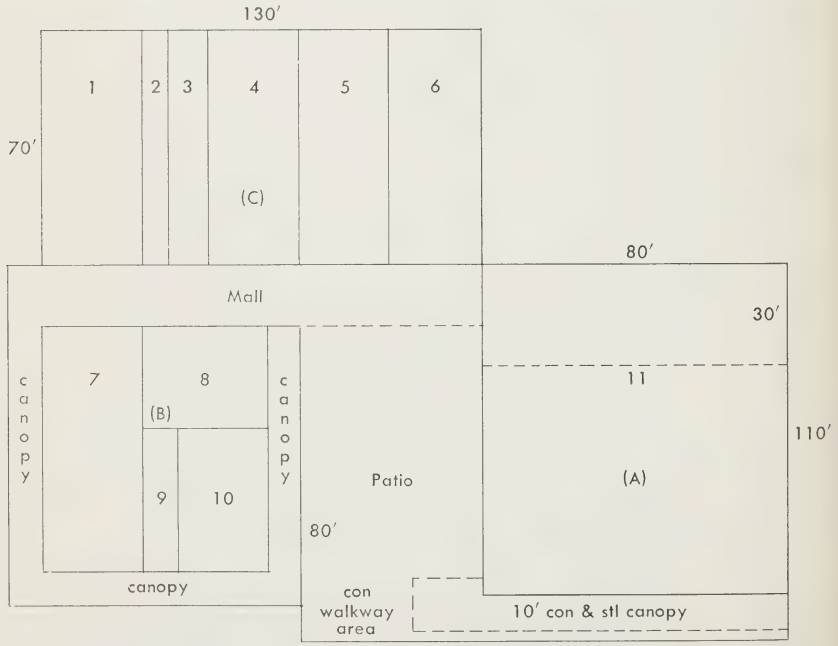
Site value=$45,500×1.20=$54,600

IMPROVEMENT ANALYSIS

The land is improved with a neighbourhood shopping centre known also as a convenience goods centre. The complex contains eight stores, two offices and a restaurant, as illustrated in the diagram below.

FIGURE 7

SHOPPING CENTRE, YORK ROAD



1. Hardware
2. Barber Shop
3. Delicatessen
4. Bank
5. Cigar and Book Store
6. Men's Wear Store
7. Drug Store
8. Doctor's Office
9. Insurance Office
10. Restaurant
11. Supermarket

Supermarket (Structure "A")

type:	One Storey—C
year built:	1957
quality of construction: (See specifications in Manual of Cost Factors)	Class 7
heating:	Low Pressure Steam
air conditioning:	Coolant Air System
sprinkler system:	Concealed
interior partitions:	16′×80′— Studs: 2″×4″—16″ o.c. Plaster on one side 6—3′×7′ Pedestrian Doors
basement:	Nil
store front:	Aluminum Framed Plates—clear anodized 20 breaks: to 75 S.F.
exterior doors:	2 Pair Aluminum Framed clear anodized 2 Single Automatic Doors Aluminum framed clear anodized
canopy:	Good quality Cantilevered Ceiled Metal Frame
concrete walkway:	6″ concrete Area: 1,000 sq. ft.

Shopping Centre (Structures "B" and "C")

type:	One Storey—C
year built:	1957
foundation:	Concrete Slab
basement:	Nil
exterior walls:	Face Brick
flooring:	Tile on Concrete
ceiling:	Tiles
interior walls:	Plaster
plumbing:	Rest rooms as found in a Quality Class 7
heating:	Coolant Air Conditioning System with Chiller. Hot Water
store front:	Aluminum Framed Clear Anodized Breaks to 75 sq. ft. Area 1,300 sq. ft. on Structure "C" Structure "B"—800 sq. ft.
doors:	Structure "B"—4 pair Aluminum Framed —1 single Aluminum Framed Structure "C"—4 pair Aluminum Framed —2 single Aluminum Framed All doors are clear anodized

partition:	Structure "B"—Area: 200 ft. Construction: 2″×4″ @ 16″ o.c. Painted Plaster (400 sq. ft.) Doors: 4 Pedestrian Structure "C"—Area: 1,300 ft. Construction: 2″×4″ @ 16″ o.c. Painted Plaster (2,600 sq. ft.) Doors: 8 Pedestrian
canopy:	Area: 3,800 sq. ft. Good quality Metal Frame
mall:	Construction: same finish as canopy—Concrete walk is the same as patio and walkway
patio and walkway:	Area: 9,200 sq. ft. 6″ Concrete slab

Yard Improvements

Total Area of Site	152,460 sq. ft.
Total Area of Structures:	34,500 sq. ft.
Area of Parking	=117,960 sq. ft.

Macadam Paved
12—2-Light electroliers—30 feet high
300 feet of concrete curbing

ESTIMATION OF REPLACEMENT COST NEW LESS DEPRECIATION

Structures	*A*	*B*	*C*
Area	8800	6400	9100
Height	16′	——	——
Basement	Nil	Nil	Nil
Design Type	Supermarket	Centre	Centre
Character of Construction	C	C	C
Quality of Construction	7	7	7
Shape	A	A	A

(a) *Supermarket Cost Factors*

Basic rate for a C 7 A: 16′ High	
Rate	7.20
Area Adjustment Factor	1.02
Rate adjusted for area	7.34
Heating:	Rate: 90¢ per foot
Air Conditioning:	Rate: $1.60 per foot
Sprinkler System:	Rate for 8,800 sq. ft. of concealed system: 50¢ per foot
Interior Partition:	Painting: 12¢ Wall Framing: 14¢ Plaster: 29¢
Store Front:	Rate: $5.10 per foot
Canopy:	Rate $5.00
Concrete Walkway:	Rate: 60¢ per sq. ft.

Replacement Cost New of Supermarket

First Floor:	8,800 sq. ft. @ $7.34	=$ 64,592
Heating:	8,800 sq. ft. @ .90	= 7,920
Air Conditioning:	8,800 sq. ft. @ 1.60	= 14,080
Sprinklers:	8,800 sq. ft. @ .50	= 4,400
Partitions:	(16′×80′)—(6′×21′)=1,154	
	1,154 sq. ft. @ .55	= 634
Doors:	6 Pedestrian Doors @ $30	= 180
Store Front:	1,280 sq. ft. @ $5.10	= 6,528
Doors:	2 Pairs @ $600	= 1,200
	2 Automatic @ $1,100	= 2,200
Canopy:	1,000 sq. ft. @ $5.00	= 5,000
Walkway:	1,000 sq. ft. @ .60	= 600
Total R.C.N.		=$107,334

Local Factor 110%

R.C.N.—City of York =$107,334×110 =$118,065

Depreciation

Average Life of Structure: 60 years
Effective Age of Structure: 8 years

The effective age is the same as the chronological age.

The structure does not suffer from abnormal obsolescence either economic or functional.

Age in years:	8 years
R.E.L.	52
Percent Good Factor:	97%
R.C.N	$118,065
Percent Good	.97

Replacement Cost Less Normal Depreciation—$114,525

(b) *Structure "B" Cost Factors*

Area:	6,400 sq. ft.	
Rate: Basic for a C 7 A is $8.90 (Neighbourhood Shopping Centre)		
Area adjustment factor	1.09	
Adjusted rate	8.90×1.09=$9.70	
Heating and Air Conditioning	Rate for 6,400 sq. ft.	=$2.30
Store Front:	Rate per foot	=$5.10
Partition:	Rate per foot	=26¢+58¢ ft. for plaster

Replacement Cost New—Structure "B"

First Floor	6,400 sq. ft. @ $9.70	=$ 62,080
Heating and Air Conditioning	6,400 sq. ft. @ 2.30	= 14,720
Store Front:	800 sq. ft. @ 5.10	= 4,080
Doors:	4 pairs @ $600	= 2,400
	1 single @ $325	= 325
Partition:	200 sq. ft. @ $0.84	= 168
Canopy:	3,800 sq. ft. @ $5.00	= 19,000
Mall:	1,600 sq. ft. @ $5.00	= 8,000
Patio and Walkway:	9,200 sq. ft. @ $0.60	= 5,520
Total R.C.N.		=$116,293

(c) *Structure "C" Cost Factors*

Area:		9,100 sq. ft.	
Rate: Basic	$8.90		
Area adjustment factor	1.02		
Adjusted rate:		$9.08	
Heating:		Rate for 9,100 sq. ft.	=$1.50
Store Front:		Rate per foot	=$5.10
Partition:		Rate per foot	= .84

Replacement Cost New—Structure "C"

First Floor	9,100 sq. ft. @ $9.08	=$ 82,628
Heating:	9,100 sq. ft. @ $1.50	= 13,650
Store Front:	1,300 sq. ft. @ $5.10 (Breaks to 75 sq. ft.)	= 6,630
Doors:	4 pairs @ $600	= 2,400
	2 singles @ $325	= 650
Partitions:	1,300 sq. ft. @ $0.84	= 1,092
(Canopy—Mall—with Structure "B")		
Total R.C.N.		=$107,050

Structure "B"	= $116,293	
Structure "C"	= 107,050	
Total	= $223,343	
Local Factor	= 110%	
R.C.N.		= $242,677

Depreciation

The structure has received normal maintenance. There is no abnormal depreciation. The parking is adequate as to location and size of the structure.

Average life	60 years	
Age in years	8 years	
Effective age	8 years	
Percent Good Factor	97%	
R.C.N.		$245,677
Percent Good		.97
R.C.L.N.D.		$238,306

(d) *Replacement Cost of Yard Improvements:*

Paving:

Area	117,960 sq. ft.	
Rate	20¢	
	117,960 sq. ft. @ 20¢	=$23,590
12 only 30′ — 2 light electroliers @ $680		= 8,160
400 Lin. Ft. Conc. Curb @ $1.00		= 400
Total R.C.N.		=$32,150
Local Factor		= 110%
R.C.N.		=$35,365

Depreciation

Average Life of Paving	15 years
Effective Age	8 years
R.E.L.	7 years
Percent Good Factor	54%
Yard Improvements New:	$35,365
Percent Good	.54
R.C.L.N.D.	$19,097

Total

Structure "A"	$114,525
Structure "B" and "C"	238,306
Yard	19,097
Value of Improvements	$371,928
Land Value	54,600
Value of the Property (By the Cost Method)	$426,528

MARKET VALUE ESTIMATE

Land	$ 54,600
Buildings	371,928
Total	$426,528
Rounded to	$426,500

Farm

In this final appraisal all three methods of valuation are applied to a farm property located in Ash Township, County of Toronto.

LEGAL DESCRIPTION

The property is legally described as all that part of Lot 7 north of the railway right-of-way on Concession 5, Township of Ash containing one hundred acres more or less.

DESCRIPTION OF THE PROPERTY

(a) *Land:* The farm consists of 100 acres; the land is well suited to the production of coarse grains and hay. There are five distinct soil types on the farm.

(i) The front forty acres are a clay loam, level, with some stoniness gently sloping and good drainage. Grade No. 2 land (80 points);

(ii) The next twenty-five acres are a clay soil, level, slightly stony and fair drainage. Grade No. 3 land (75 points);

(iii) There are ten acres in the southwest corner similar to the previous soil type; however, its shape (triangular) makes it awkward to cultivate with large machinery. Grade No. 4 land (55 points);

(iv) The fifteen acres on the east side are black muck and have six inches to one foot of topsoil underlain with spots of quicksand. Five acres of this section are covered with trees while the remainder is pasture. The area is subject to excessive flooding. Grade No. 5 land (40 points);

(v) In the southeast corner are ten acres of soil similar to that in the southwest corner and covered with trees.

(b) *Improvements:* There are three major buildings on the farm—a house, a barn and an implement shed. These buildings are wired for electricity and served by well water from the farm. The water is pumped to the buildings electrically.

(i) House—(the buildings are described in more detail on the appraisal card).

foundation:	A full basement with fieldstone walls and a concrete floor. The walls are 7'9" in height.
exterior walls:	Solid brick.
floors:	Softwood in all rooms but the kitchen, which is covered with linoleum, and the bathroom, which has a tile floor.
roof:	A hip roof with 1/4 pitch and covered with 210 lbs. asphalt shingles.
sash and doors:	The windows are frame, double hung and painted. The doors are standard.
interior finish:	Wood lath and plaster on the walls and ceilings of all rooms.
cabinet and built-ins:	The storage capacity is average.
plumbing:	Standard three-piece bathroom and a porcelain kitchen sink.
heating:	Central, coal-fired gravity furnace.
electrical:	There is cable wiring with an average number of outlets of medium quality.

garage and frame shed: The garage is one-half of an old frame shed converted to a garage. The garage is unlined with a concrete floor.

(ii) Barn—built in 1880.

The bank barn is a typical "L" shaped frame timber structure. The main barn has 18 foot posts while the foot of the "L" has 10 foot posts. The barn has a nine foot stone foundation with a concrete floor. It has very little stabling.

(iii) Implement Shed.

The shed is frame on a rubble foundation and a dirt floor. It is badly in need of repairs.

Sales of Comparable Properties

There are fourteen recent sales of comparable properties in the area. Seven of these are sales of land only and are used to provide an estimate of area-wide land values. The remaining seven sales include buildings, which provide an excellent measure of the abnormal depreciation of farm buildings in the area, as well as a check on the land values estimated from the other sales.

Sale No. 1

Location	South part of Lot 24, Concession 6, Township of Ash		
Date of Sale	July, 1966		
Sale Price	$7,000		
Terms	Cash		$1,000
	1st Mortgage		3,000
	2nd Mortgage		3,000
Land	*Size*	*Grade*	*Rating*
	50 ac.	#1	95 points
Improvements	nil		

Sale No. 2

Location	South part of Lot 22, Concession 4, Township of Ash		
Date of Sale	October, 1965		
Sale Price	$3,000		
Terms	Cash	$3,000	
Land	*Size*	*Grade*	*Rating*
	20 ac.	#2	85 points
	15 ac.	#3	70 points
	8.5 ac.	#5	40 points
Improvements	nil		

Sale No. 3

Location	South part of Lot 19, Concession 2, Township of Ash		
Date of Sale	April, 1966		
Sale Price	$5,000		
Terms	Cash $5,000		
Land	*Size*	*Grade*	*Rating*
	65 ac.	#4	60 points
	35 ac.	#5	40 points
Improvements	nil		

Sale No. 4

Location	North part of Lot 18, Concession 6, Township of Ash		
Date of Sale	January, 1966		
Sale Price	$3,700		
Terms	Cash $3,700		
Land	*Size*	*Grade*	*Rating*
	35 ac.	#1	95 points
	4 ac.	#5	50 points
Improvements	nil		

Sale No. 5

Location	North part of Lot 9, Concession 4, Township of Ash		
Date of Sale	December, 1965		
Sale Price	$4,000		
Terms	Cash $4,000		
Land	*Size*	*Grade*	*Rating*
	30 ac.	#2	90 points
	10 ac.	#3	70 points
	10 ac.	tree covered—not used	
Improvements	nil		

Sale No. 6

Location	North part of Lot 3, Concession 3, Township of Ash		
Date of Sale	February, 1966		
Sale Price	$12,000		
Terms	Cash	$1,000	
	1st Mortgage	7,000	
	2nd Mortgage	4,000	
Land	*Size*	*Grade*	*Rating*
	70 ac.	#1	95 points
	27 ac.	#2	80 points
	3 ac.	#5	40 points
Improvements	nil		

Sale No. 7

Location	North part of Lot 7, Concession 2, Township of Ash		
Date of Sale	November, 1965		
Sale Price	$7,000		
Terms	Cash $7,000		
Land	*Size*	*Grade*	*Rating*
	35 ac.	#1	95 points
	35 ac.	#2	80 points
	30 ac.	#4	65 points
Improvements	nil		

Analysis of Land Sales

Both Sales No. 1 and No. 6 are financed with a relatively low cash down payment and a second mortgage. On the basis of interviews with investors in the area the second mortgages have been discounted 30% to reflect the current investment market. The first mortgages are accepted at face value as is the case with local investors. Thus the market equivalents of Sales No. 1 and No. 6 are $6,100 and $10,800 respectively.

The indicated market values of the various grades of farm land are:

No. 1	$115 per acre
No. 2	$ 95 per acre
No. 3	$ 70 per acre
No. 4	$ 60 per acre
No. 5	$ 35 per acre

The analysis of land values is summarized in Table 12. Where there is more than one grade of land included in the sale, the per acre values are estimated in an empirical fashion. There are two constraints that must be kept in mind when this method is used. First, the values for lower grades of land must be less than the values for higher grades. Second, the total market value of the property, when calculated from these rates, must fall within one percent of the market equivalent of the sale price.

Abnormal Depreciation

A major problem encountered when estimating the market value of farm properties is the proper allowance for abnormal depreciation suffered by farm buildings and not measurable by any depreciation schedule. This abnormal depreciation is generally a result of functional obsolescence brought about by changing social conditions

TABLE 12

LAND SALES ANALYSIS

Sale No.	Market Equivalent	1	2	3	4	5	Woods	Estimated Market Value
		Size[1] Value[2]	Size Value	Size Value	Size Value	Size Value	Size Value	
1	$ 6,100	50 @ $122						$ 6,100
2	3,000		20 @ $85	15 @ $70		8.5 @ $30		3,005
3	5,000				65 @ $60	35 @ $30		4,950
4	3,700	35 @ $100				4 @ $50		3,700
5	4,000		30 @ $95	10 @ $70			10 @ $45[4]	4,000
6	10,800	70 @ $115	27 @ $95			3 @ $40		10,815
7	9,000	35 @ $110	35 @ $95		30 @ $60			8,975
Estimated Value per Acre[3]		$113 rounded to $115	$95	$70	$60	$35	$45[2]	

[1]acres
[2]per acre
[3]median value
[4]a nominal value of $450 was placed on the wooded area.

and improved agricultural technology. There may also be an element of economic obsolescence if the properties are located in an area where the farms are being consolidated into larger units.

Seven sales were analyzed in order to estimate the proper allowance for abnormal depreciation in the area to be applied to the subject property.

Sale No. 8

Location	North part of Lot 4, Concession 2, Township of Ash	
Date of Sale	August, 1965	
Terms	Cash $19,500	
Land	Size 100 acres Value $10,875 Grade predominantly #1; also #2 and woods	
Improvements	Residual Building Value= $19,500—$10,875	=$ 8,625
	R.C.L.N.D.—	
	House $5,260	
	Barn 5,645	
	Garage 265	
	Total	=$11,170
Abnormal Depreciation	$11,170—$8,625	=$ 2,545
Abnormal Depreciation as a percentage of total R.C.L.N.D.	$ 2,545 / $11,170	=23%

Sale No. 9

Location	North part of Lots 21 and 22, Concession 4, Township of Ash	
Date of Sale	October, 1965	
Sale Price	$20,500	
Terms	Cash $20,500	
Land	Size 116.5 acres Value $12,110 Grade predominantly #1 and #2, also #5	
Improvements	Residual Building Value= $20,500—$12,110	=$ 8,390
	R.C.L.N.D.	
	House $6,095	
	Barn 4,200	
	Shed 290	
	Total	=$10,585
Abnormal Depreciation	= $10,585—$8,390	=$ 2,195
Abnormal Depreciation (%)	= $\frac{\$\ 2,195}{\$10,585} \times 100$	=21%

Sale No. 10

Location	North part of Lot 10, Concession 5, Township of Ash		
Date of Sale	September, 1965		
Sale Price	$13,500		
Terms	Cash $13,500		
Land	Size 92 acres		
	Value $5,980		
	Grade largely #3; also #2 and #5		
Improvements	Residual Value=		
	$13,500—$5,980		=$ 7,520
	R.C.L.N.D.		
	House $4,475		
	Barn 4,760		
	Hog House 550		
	Shed 475		
	Garage 190		
	Total		=$10,450
Abnormal Depreciation	= $10,450—$7,520		=$ 2,930
Abnormal Depreciation (%)	= $\frac{\$\ 2{,}930}{\$10{,}450} \times 100$		=28%

Sale No. 11

Location	North part of Lot 13, Concession 2, Township of Ash		
Date of Sale	May, 1966		
Sale Price	$13,500		
Terms	Cash $13,500		
Land	Size 100 acres		
	Value $7,070		
	Grade largely #3; also #2 and #5; some woods		
Improvements	Residual Value=		
	$13,500—$7,070		=$ 6,430
	R.C.L.N.D.		
	House $3,535		
	Barn 4,380		
	Shed 300		
	Total		=$ 8,215
Abnormal Depreciation	= $8,215—$6,430		=$ 1,785
Abnormal Depreciation (%)	= $\frac{\$1{,}785}{\$8{,}215} \times 100$		=22%

Sale No. 12

Location	South part of Lots 1 and 2, Concession 5, Township of Ash
Date of Sale	January, 1966

Sale Price	$19,750		
Terms	Cash	$19,750	
Land	Size	200 acres	
	Value	$10,950	
	Grade	largely #4; also #2 and #5; some swamp.	
Improvements	Residual Value= $19,750—$10,950		=$ 8,800
	R.C.L.N.D.		
	House	$5,625	
	Shed	530	
	Barn	4,535	
	Barn	1,835	
	Total		=$12,525
Abnormal Depreciation	= $12,525—$8,800		=$ 3,725
Abnormal Depreciation (%)	= $\frac{\$\ 3{,}725}{\$12{,}525} \times 100$		=30%

Sale No. 13

Location	North part of Lot 17, Concession 4, Township of Ash		
Date of Sale	March, 1966		
Sale Price	$13,000		
Terms	Cash	$13,000	
Land	Size	91 acres	
	Value	$6,075	
	Grade	largely #2 and #3; also #4; some swamp	
Improvements	Residual Value= $13,000—$6,075		=$ 6,925
	R.C.L.N.D.		
	House	$3,875	
	Barn	5,370	
	Total		=$ 9,245
Abnormal Depreciation	= $9,245—$6,925		=$ 2,320
Abnormal Depreciation (%)	= $\frac{\$\ 2{,}230}{\$\ 9{,}245} \times 100$		=25%

Sale No. 14

Location	South part of Lot 6, Concession 4, Township of Ash		
Date of Sale	December, 1965		
	$15,000		
Land	Size	100 acres	
	Value	$6,500	
	Grade	predominantly #3 and #4; some swamp	

Improvements	Residual Value= $15,000—$6,500	=$ 8,500
	R.C.L.N.D.	
	House $6,385	
	Barn 4,595	
	Shed 400	
	Total	=$11,380
Abnormal Depreciation	= $11,380—$8,500	=$ 2,880
Abnormal Depreciation (%)	= $\frac{\$\ 2,880}{\$11,380} \times 100$	=25%

Since, on the basis of these sales, the median allowance for abnormal depreciation is 25%, it is assumed that farms in the area typically suffer that amount over and above any normal depreciation.

Value of the Farm—Comparative Sales Method of Valuation

The seven farms used in the analysis of abnormal depreciation are sufficiently similar to the subject property that they can be used as comparable to estimate its market value. In order to facilitate the analysis the farms are compared on a price per acre.

The per acre price must be adjusted to reflect the differences in the grades of farm land and, in the case of Sale No. 12, a difference in farm size.

No adjustments are made for buildings as these are regarded as sufficiently alike that adjustments are not required. Furthermore, there has not been sufficient change in the level of market activity to warrant any adjustments in this regard.

Table 13

ANALYSIS OF FARM LAND PRICES

Sale	Sale Price	Price Per Acre	Adjustment (per acre)	Adjusted Price per Ac.
8	$19,500	$195	−$20—for better land	$175
9	$20,500	$176	−$15—for better land	
			+$ 5—for size	$166
10	$13,500	$133	+$30—for worse land	$163
11	$13,500	$135	+$35—for worse land	$170
12	$19,750	$ 99	+$25—for worse land	
			+$20—for size	$144
13	$13,000	$141	+$30—for worse land	$171
14	$15,000	$150	+$25—for worse land	$175

The median adjusted price per acre is $170 with a range in value between $175 per acre and $144 per acre. On the basis of this analysis, the estimated market value of the subject property is $17,000.

Income Capitalization Method of Valuation

As in any application of the income method of valuation, the assessor has two distinct problems to solve before he can estimate the market value of a property. He must estimate a net income for the property and he must calculate a capitalization rate.

Net Income: The first step in estimating net income is to analyze sufficient rentals that a gross income can be established. In most instances, improvements are not included in rentals so that gross income is generally expressed on a per acre basis. In this discussion, it is assumed that the analysis of gross income has been completed.

Subject to two qualifications, gross income from rural properties is reduced to net income in the same fashion as it is for urban properties. First, it is seldom necessary to make an allowance for vacancy and collection losses. Second, there may be expenses appropriate for rural properties that are not applicable to urban properties and vice versa. Expenses that are often deducted in the case of rural properties are the costs of providing fences and water when these costs are paid by the owner.

The analysis of comparability on the basis of productivity can be difficult when there are large variations in soil grades among farms. However, if the land grading system explained in Appendix A is used, lands of various grades can be compared by converting the net income to an income per point (analogous to an income per front foot).

The conversion of net income to an income per point is done in the following manner:

For each unit of land rented—

(a) calculate the total number of points for each grade of soil in the unit;

(b) calculate the number of points for the entire unit;

(c) divide the net income by the number of points to arrive at the income per point.

Example:

Given: Size—100 acres
Net Income—$1,000
Grade—#2, 80 acres at 85 points
—#3, 20 acres at 70 points

Procedure: 80 acres @ 85 points = 6,800
20 acres @ 70 points = 1,400
8,200

8,200 points rent for $1,000

$$\text{Income per point} = \frac{\$1,000}{8,200} = 12.2¢$$

Rental No. 1

Location	North part of Lot 13, Concession 1, Township of Ash
Rental Year	1965
Rental	$750 per annum
Expenses	$100 per annum
Net Income	$650 per annum

Land

Size	Grade	Points	Total
40 acres	1	95	3,800
30 acres	2	90	2,700
20 acres	6	35	700
10 acres—no value			
90 acres			7,200

$$\text{Income per point} = \frac{\text{Net Income}}{\text{Total Points}} = \frac{\$\ 650}{7,200} = 9¢$$

Rental No. 2

Location	South part of Lot 8, Concession 3, Township of Ash
Rental Year	1966
Rental	$800 per annum
Expenses	$150 per annum
Net Income	$650 per annum

Land

Size	Grade	Points	Total
50 acres	2	80	4,000
50 acres	3	65	3,250
100 acres			7,250

$$\text{Income per point} = \frac{\$\ 650}{7,250} = 8.9¢$$

Rental No. 3

Location	South part of Lot 14, Concession 4, Township of Ash
Rental Year	1966
Rental	$325 per annum
Expenses	$100 per annum
Net Income	$225 per annum

Land	Size	Grade	Points	Total
	40 acres	4	55	2,200
	10 acres	6	35	350
	50 acres			2,550

Income per point $= \frac{\$\ 225}{2{,}550} = 8.8¢$

Rental No. 4

Location	Southwest part of Lot 4, Concession 4, Township of Ash
Rental Year	1966
Rental	$500 per annum
Expenses	$100 per annum
Net Income	$400 per annum

Land	Size	Grade	Points	Total
	40 acres	1	95	3,800
	10 acres	4	50	500
	50 acres			4,300

Income per point $= \frac{\$\ 400}{4{,}300} = 9.3¢$

Rental No. 5

Location	South part of Lot 24, Concession 5, Township of Ash
Rental Year	1966
Rental	$1,000 per annum
Expenses	$ 100 per annum
Net Income	$ 900 per annum

Land	Size	Grade	Points	Total
	100 acres	1	95	9,500

Income per point $= \frac{\$\ 900}{9{,}500} = 9.5¢$

On the basis of these five rentals, the median income per point is 9¢. The net income for the subject property is estimated on the basis of this amount.

TABLE 14

FARM LAND PRODUCTIVITY

Size	Grade	Points	Total
40 acres	2	80	3,200
25 acres	3	75	1,875
10 acres	4	55	550
10 acres	5	40	400
85 acres			6,025

The net income of the cleared land is $6,025 \times .09 = \$542.25$.

Fifteen acres of woods provide 50 cords of wood per year which, it is estimated, will sell for a net price of 70¢ per cord.

Net income from wood $= 50 \times .70 = \$35.00$
Total net income from the farm $= \$542.25 + \$35.00 = \$577.25$
This is rounded to $575.

Capitalization Rate: It is generally impossible to develop an income for farm improvements since, for the most part, only land is rented. Where entire farms are rented it may be possible to impute a rent to the improvements, although the allocation will be highly subjective. In view of this exclusion of improvements from farm income, the capitalization rate applicable for farm properties does not include an amortization allowance reflecting the fact that the entire income is assumed to be derived from a non-wasting asset—land.[1]

The allowance for property taxes is determined in the same manner as it is for urban properties and in this instance is assumed to equal 2.5%.

The yield rate applicable for farm properties is essentially a function of government programmes aimed at facilitating the purchase of farms. The more important of these programmes are the loans made under The Veterans Land Act and by the Farm Credit Corporation, both of which are administered by the Federal Department of Agriculture. In both programmes, the interest charged on the loans is graduated, with the rates rising as the amounts borrowed increase. The interest rates are established by the Federal Government and vary periodically. The estimated yield rate must reflect

[1]The value of the improvements is assumed to be equal to their depreciated cost and is added to the capital value of the land in order to estimate the market value of the farm.

these statutory interest rates with perhaps some allowance for lack of liquidity of the investment and for risk. In this instance, it is assumed that the yield rate equals 5.5%.

The capital value of the land is calculated as follows:

Capitalization rate = 2.5% + 5.5% = 8%

Net income = $575

Capital value = $\frac{\$575}{.08}$ = $7,187.50 rounded to $7,200

The depreciated cost of the improvement is $10,000

The estimated market value of the farm is $17,200

Cost Method of Valuation

Rather than show the calculations to determine the replacement cost less normal depreciation of the residence and the farm buildings, these figures have been worked out on the appraisal cards, Figures 8 and 9. They are summarized in Table 15.

Table 15

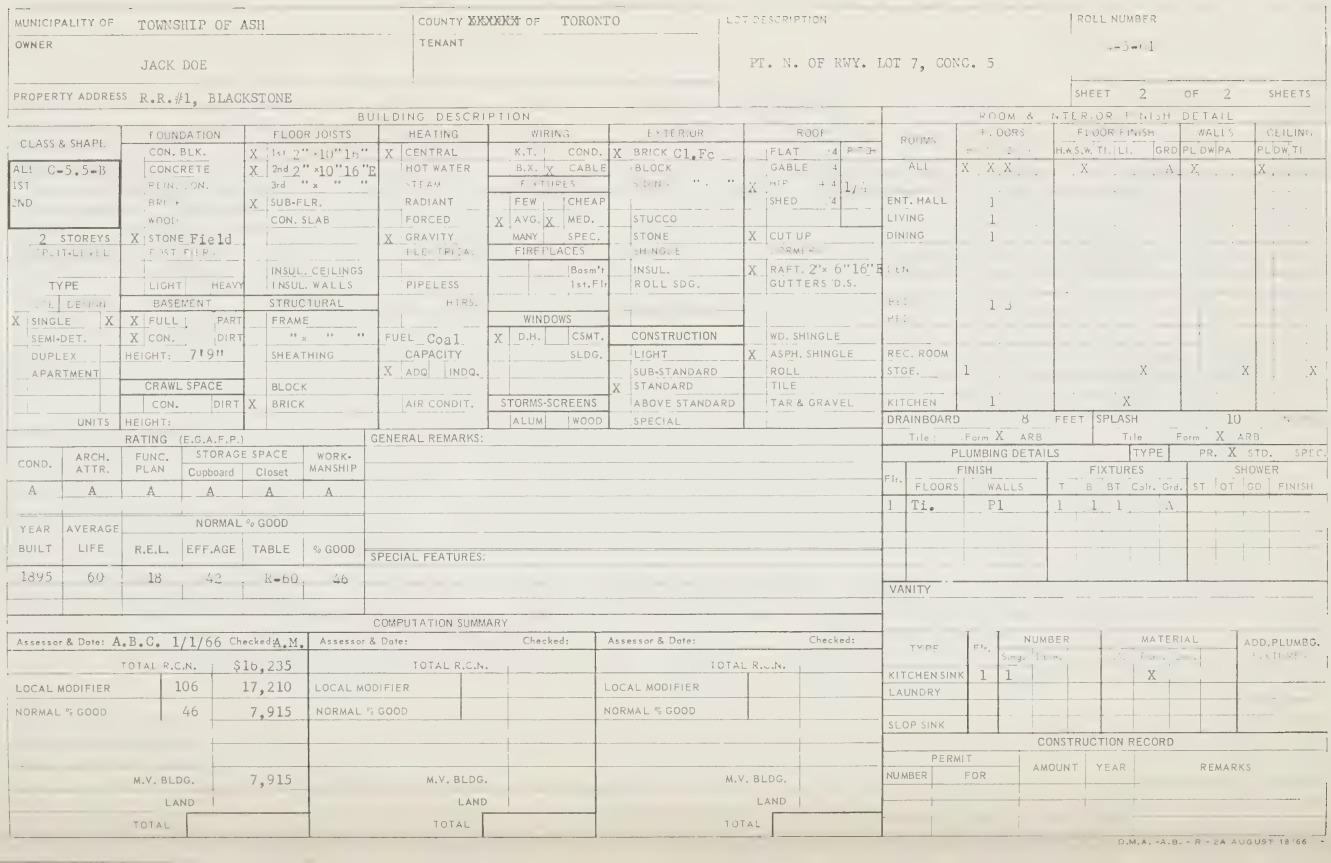
REPLACEMENT COST NEW LESS DEPRECIATION
FARM BUILDINGS

Improvement	R.C.L.N.D.
House	$ 7,915
Barn	4,955
Shed	465
Total	$13,335

The allowance for abnormal depreciation is 25%. Thus the market value of the farm residence and buildings is $13,335−(25% of $13,335)=$10,001 (rounded to $10,000).

The value of the land is estimated by applying the appropriate rates per acre to the various grades of land on the farm. This land value estimate actually indicates the typical value of such land in the area as determined from the analysis of sales of raw land.

FIGURE 8



MUNICIPALITY OF TOWNSHIP OF ASH | COUNTY ~~XXXXX~~ OF TORONTO | LOT DESCRIPTION | ROLL NUMBER

OWNER: JACK DOE | TENANT

LOT DESCRIPTION: PT. N. OF RWY. LOT 7, CONG. 5

PROPERTY ADDRESS R.R.#1, BLACKSTONE

SHEET 2 OF 2 SHEETS

BUILDING DESCRIPTION

CLASS & SHAPE	FOUNDATION	FLOOR JOISTS	HEATING	WIRING	EXTERIOR	ROOF
ALL C-5.5-B	CON. BLK.	X 1st 2" x 10" 16"	X CENTRAL	K.T. COND.	X BRICK C1.Fc	FLAT 4 PITCH
1ST	CONCRETE	X 2nd 2" x 10" 16" E	HOT WATER	B.X. X CABLE	BLOCK	GABLE 4
2ND	REINFORCED	3rd " x " "	STEAM	FIXTURES	STONE " "	X HIP 4 1/2
	BRICK	X SUB-FLR.	RADIANT	FEW CHEAP		SHED 4
	WOOD	CON. SLAB	FORCED	X AVG. X MED.	STUCCO	
2 STOREYS	X STONE Field		X GRAVITY	MANY SPEC.	X STONE	X CUT UP
SPLIT-LEVEL	FIELD		ELECTRIC	FIREPLACES	SHINGLE	DORMER
		INSUL. CEILINGS		Basm't	INSUL.	X RAFT. 2"x 6" 16" E
TYPE	LIGHT HEAVY	INSUL. WALLS	PIPELESS	1st.Flr	ROLL SDG.	GUTTERS D.S.
DET. SEMI-DET.	BASEMENT	STRUCTURAL	HTRS.	WINDOWS		
X SINGLE X	X FULL PART	FRAME		X D.H. CSMT.	CONSTRUCTION	WD. SHINGLE
SEMI-DET.	X CON. DIRT	" x " "	FUEL Coal	SLDG.	LIGHT	X ASPH. SHINGLE
DUPLEX	HEIGHT: 7'9"	SHEATHING	CAPACITY		SUB-STANDARD	ROLL
APARTMENT	CRAWL SPACE	BLOCK	X ADQ. INDQ.		X STANDARD	TILE
	CON. DIRT	X BRICK	AIR CONDIT.	STORMS-SCREENS	ABOVE STANDARD	TAR & GRAVEL
UNITS	HEIGHT:			ALUM WOOD	SPECIAL	

ROOM & INTERIOR FINISH DETAIL

ROOMS	FLOORS	FLOOR FINISH	WALLS	CEILING
		H.W.S.W. TI. LI. GRD PLDW PA		PLDW TI
ALL	X X X	X A	X	X
ENT. HALL	1			
LIVING	1			
DINING	1			
Bdrm				
Bdrm	1 1			
Bdrm				
REC. ROOM				
STGE.	1	X	X	X
KITCHEN	1	X		

DRAINBOARD 8 FEET | SPLASH 10 "

Tile Form X ARB | Tile Form X ARB

RATING (E.G.A.F.P.)

COND.	ARCH. ATTR.	FUNC. PLAN	STORAGE SPACE Cupboard	STORAGE SPACE Closet	WORKMANSHIP
A	A	A	A	A	A

YEAR BUILT	AVERAGE LIFE	NORMAL % GOOD R.E.L.	EFF.AGE	TABLE	% GOOD
1895	60	18	42	R-60	46

GENERAL REMARKS:

SPECIAL FEATURES:

PLUMBING DETAILS

TYPE PR. X STD. SPEC.

Flr.	FINISH FLOORS	FINISH WALLS	FIXTURES T	B	BT	Cslr.	Grd.	SHOWER ST	OT	GD	FINISH
1	Ti.	P1	1	1	1		A				

VANITY

TYPE	Flr.	NUMBER Symp.	Exist.	MATERIAL Symp.	Exist.	ADD.PLUMBG. Exist.	Prop.
KITCHEN SINK	1	1		X			
LAUNDRY							
SLOP SINK							

COMPUTATION SUMMARY

Assessor & Date: A.B.C. 1/1/66 Checked A.M.			Assessor & Date: Checked:		Assessor & Date: Checked:	
TOTAL R.C.N.		$16,235	TOTAL R.C.N.		TOTAL R.C.N.	
LOCAL MODIFIER	106	17,210	LOCAL MODIFIER		LOCAL MODIFIER	
NORMAL % GOOD	46	7,915	NORMAL % GOOD		NORMAL % GOOD	
M.V. BLDG.		7,915	M.V. BLDG.		M.V. BLDG.	
LAND			LAND		LAND	
TOTAL			TOTAL		TOTAL	

CONSTRUCTION RECORD

PERMIT NUMBER	PERMIT FOR	AMOUNT	YEAR	REMARKS

D.M.A. - A.B. - R - 2A AUGUST 18/66

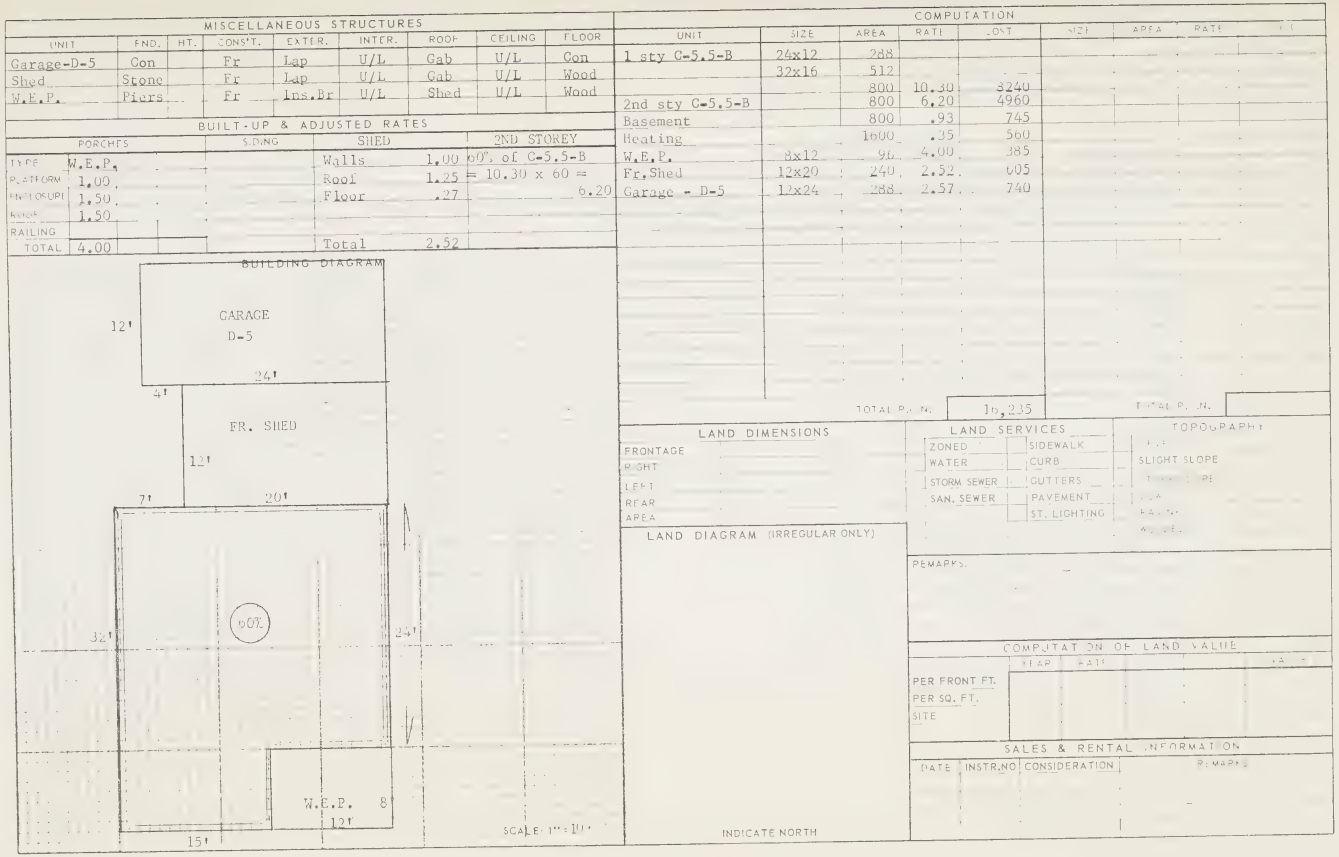

MISCELLANEOUS STRUCTURES
UNIT | END. | HT. | CONS'T. | EXTER. | INTER. | ROOF | CEILING | FLOOR
Garage-D-5 | Con | | Fr | Lap | U/L | Gab | U/L | Con
Shed | Stone | | Fr | Lap | U/L | Gab | U/L | Wood
W.E.P. | Piers | | Fr | Ins.Br | U/L | Shed | U/L | Wood
BUILT-UP & ADJUSTED RATES
PORCHES | SIDING | SHED | 2ND STOREY
TYPE W.E.P.
PLATFORM 1.00
ENCLOSURE 1.50
RAILING 1.50
TOTAL 4.00
Walls 1.00
Roof 1.25
Floor .27
Total 2.52
90% of C-5.5-B = 10.30 x 60 = 6.20
COMPUTATION
UNIT | SIZE | AREA | RATE | COST
1 sty C-5.5-B | 24x12 | 288 | |
 | 32x16 | 512 | |
 | | 800 | 10.30 | 8240
2nd sty C-5.5-B | | 800 | 6.20 | 4960
Basement | | 800 | .93 | 745
Heating | | 1600 | .35 | 560
W.E.P. | 8x12 | 96 | 4.00 | 385
Fr.Shed | 12x20 | 240 | 2.52 | 605
Garage - D-5 | 12x24 | 288 | 2.57 | 740
TOTAL P. N. 16,235
BUILDING DIAGRAM
CARAGE
D-5
12'
24'
4'
FR. SHED
12'
7'
20'
90%
32'
24'
W.E.P. 8
12'
15'
SCALE 1" = 10'
LAND DIMENSIONS
FRONTAGE
RIGHT
LEFT
REAR
AREA
LAND SERVICES
ZONED | SIDEWALK
WATER | CURB
STORM SEWER | GUTTERS
SAN. SEWER | PAVEMENT
ST. LIGHTING
TOPOGRAPHY
SLIGHT SLOPE
LAND DIAGRAM (IRREGULAR ONLY)
INDICATE NORTH
REMARKS
COMPUTATION OF LAND VALUE
PER FRONT FT.
PER SQ. FT.
SITE
SALES & RENTAL INFORMATION
DATE | INSTR.NO | CONSIDERATION | REMARKS

FIGURE 9

MUNICIPALITY OF	COUNTY / DISTRICT OF	DESCRIPTION	ROLL NUMBER
TOWNSHIP OF ASH	TORONTO	PT. N. OF RWY. LOT 7, CONC. 5	4-5-61
OWNER: JACK DOE	TENANT:		
PROPERTY ADDRESS: R.R. #1, BLACKSTONE		TOTAL NO. ACRES: 100	SHEET 1 OF 2 SHEETS

DESCRIPTION OF FARM OUT-BUILDINGS

BLDG NO	STRUCTURE	CLASS	SIZE	FND.	WALL & EXTERIOR	ROOF TYPE	ROOF COVER	FLOOR & INTERIOR	ADDITIONAL STOREYS / LOFT	YEAR BUILT	% GOOD AVERAGE LIFE	% GOOD REL. EFF. AGE	% GOOD TABLE	% GOOD
1	Barn	1-5	52x50 26x44	Stone	Fr.	Gab	Stl	Con. - U/L		1885	50 . 8 . 42	OR-50		40
2	Imp. Shed	D-4	20x40 18x10	Rubb.	Fr.	Gab	W. Shg	Earth		1900	25 . 3 . 22	OR-25		30

LAND CLASSIFICATION SOIL GROUP	SOIL GRADE	SOIL POINTS	ACRES	CLIMATIC ZONE RATE	VALUE
3	2	80	40	95	3,800
	3	75	25	70	1,750
	4	55	10	60	600
	5	40	15	35	525
	5	55	10	45	450
					7,125

COMPUTATIONS

BLDG NO	SIZE	AREA	ASSESSOR & DATE A.B.C. 1/1/66 RATE	COST	% GOOD	R.C.L.N.D.	CHECKED: P.M. ASSESSOR & DATE RATE	COST	% GOOD	R.C.L.N.D.	ASSESSOR & DATE RATE	COST	% GOOD	R.C.L.N.D.
1	52x50	2600												
	26x44	1144												
		3744	3.31	12,390	40	4,955								
2	20x40	800												
	18x10	180												
		980	1.55	1,550	30	465								

SUB TOTAL R.C.L.N.D.	5,420
SHEET NO. SUB-TOTAL R.C.L.N.D.	
TOTAL R.C.L.N.D. FARM OUT-BUILDINGS	5,420
SHEET NO. 2 FARM RESIDENCE	7,915
TOTAL M.V. ALL BUILDINGS	13,335
Additional Obsol. 25%	10,000
SHEET NO. LAND VALUE	7,125
SHEET NO. LAND VALUE	
TOTAL	17,125

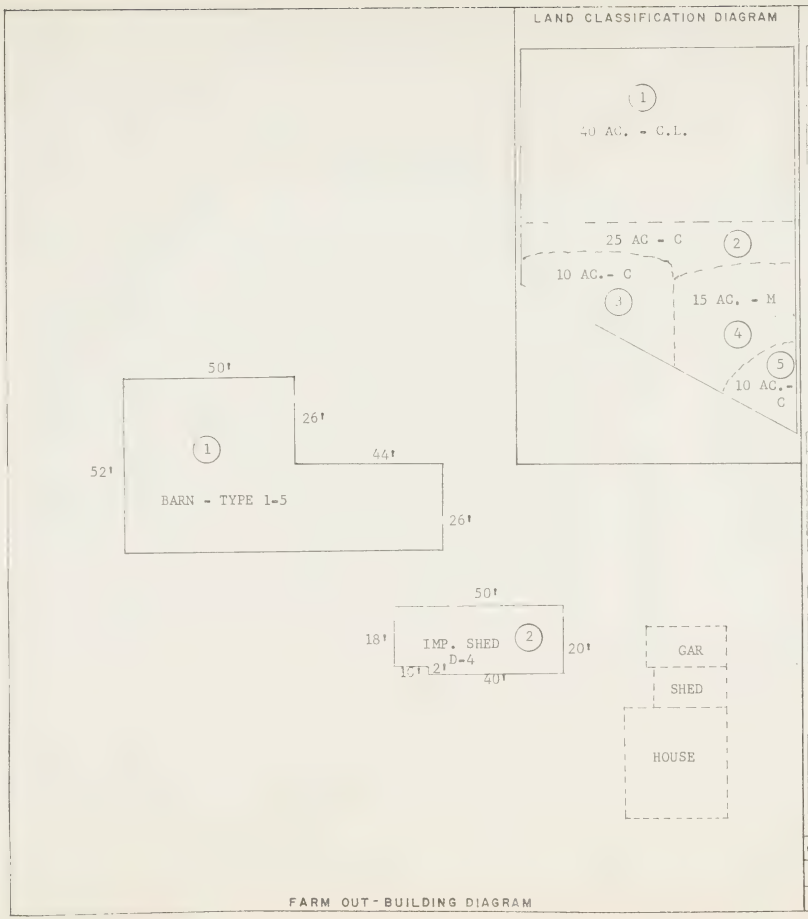
GENERAL REMARKS

CONSTRUCTION RECORD

PERMIT NO	FOR	AMOUNT	YEAR	REMARKS

SALES INFORMATION

DATE	INSTR. NO	CONSIDERATION	ACRES	REMARKS



TEXTURE BY SOIL GROUPS

NO. 1 SAND — SPECIAL CROPS — NO. 2 CLAY

PARCEL NO.		1	2	3	4
10	SAND SPOT PHASE				
5	FINE SANDY LOAM				
0	SANDY LOAM				
5	SANDY CLAY LOAM				
10	CLAY LOAM				
	TOTAL PTS DEDUCTED				
	GRADE POINTS				

PARCEL NO.		1	2	3	4
10	SAND OR SANDY PHASE				
5	SANDY LOAM				
0	CLAY LOAM				
5	SILT LOAM				
10	CLAY				
	TOTAL PTS DEDUCTED				
	GRADE POINTS				

NO. 3 GENERAL PURPOSE — LOAM

PARCEL NO.		1	2	3	4	5
10	SAND OR SANDY PHASE					
5	SANDY LOAM					5
0	LOAM					
5	CLAY LOAM	5				
10	CLAY		10	10		10
	TOTAL PTS DEDUCTED	20	25	45	60	45
	GRADE POINTS	80	75	55	40	55

TOPOGRAPHY

PARCEL NO.		1	2	3	4	
0	LEVEL		0	0	0	0
5	GENTLY SLOPING	5				
10	ROLLING					
20	HILLY					
40	STEEP					

EROSION

PARCEL NO.		1	2	3	4	
0	NONE	0	0	0	0	0
5	SLIGHT					
10	MODERATE					
20	SEVERE					
30	VERY SEVERE					

STONINESS

PARCEL NO.		1	2	3	4	
0	STONE FREE				0	
5	SLIGHTLY STONY		5			
10	MODERATE STONE	10		10		10
25	VERY STONY					
40	EXCESSIVELY STONY					

DRAINAGE

PARCEL NO.		1	2	3	4	
0	GOOD	0				
10	FAIR		10			
25	POOR			25	25	25
40	VERY POOR					

DEPTH OF TOP SOIL

PARCEL NO.		1	2	3	4	
0	DEEP - 3'	0	0	0	0	0
20	MOD DEEP - 2'-3'					
40	SHALLOW - 1'-2'					
65	VERY SHALLOW 1'					

FLOODING

PARCEL NO.		1	2	3	4	
0	NO FLOODING	0	0	0		0
10	OCCASIONAL FLOODING					
20	SEASONAL FLOODING					
30	EXCESSIVE FLOODING				30	

GENERAL REMARKS ON LAND: Parcel (3) is difficult to cultivate because of shape and Parcel (5) is covered with second growth hardwood - A.B.C. 1/1/66

TABLE 16

LAND VALUE

Grade	Size	Rate	Value
2	40 acres	$95	$3,800
3	25 acres	$70	1,750
4	10 acres	$60	600
5	15 acres	$35	525
Woods	10 acres	$45[1]	450
Total Value	100 acres		$7,125

The estimated market value of the farm is the sum of the depreciated cost of the building and the estimated value of the land.

Market value=B.V.+L.V.
=$10,000+$7,125
=$17,125 rounded to $17,100

SUBSTANTIATION OF THE VALUE ESTIMATE

The three methods of valuation have led to three estimates of market value:

(a) Comparative Sales — $17,000
(b) Income Capitalization — $17,200
(c) Cost — $17,100

Since the comparative sales method is based on actual transactions of comparable farms, the most reliance should be placed on it. Both the income capitalization and cost estimates are higher, which may reflect characteristics of the farm that are superior to the comparable farms. However, the different estimates may only reflect the impact of the various assumptions used in each of the methods. Therefore, the assessor would be justified in estimating the market value of the farm as $17,000.

[1]There were no sales of comparable land and the rate was devised on the basis of the income to be derived from such land.

Appendix A

THE CLASSIFICATION OF AGRICULTURAL LAND

The most critical element to be considered when valuing farm properties is the analysis of those factors that influence agricultural productivity. Among the various influences on productivity the most important is soil condition. A thorough knowledge of soils, including climatic conditions, is essential in order to evaluate productivity.

The classification of soils, while difficult and requiring a substantial element of judgment on the part of the assessor, will ease the job of productivity analysis considerably. The Federal Departments of Agriculture and of Forestry, the Ontario Department of Agriculture and Food, and the Ontario Agricultural College at the University of Guelph, are excellent sources of information regarding soil conditions in Ontario.

Another very significant influence on agricultural productivity is climatic conditions. The range in kinds of crops, the yield per acre and the risk involved in production are all affected by climate. The province has been divided into seven climatic zones on the basis of length of growing season, summer and winter mean temperatures and precipitation. Although no one municipality is likely to be located in more than one climatic zone, assessors should incorporate climatic factors into any classification system they use. This is particularly true in the fringe areas of climatic zones as the boundaries of the zones are not as rigidly fixed as they appear on a map. In actual fact, climatic conditions change gradually and the zones merge into one another.

It is possible for an assessor to establish his own method of soil classification; however, several soil classification systems have already been prepared. The one described in this appendix is recommended by the Department of Municipal Affairs for assessors in Ontario.

This classification system has two distinct elements that must be considered when rating soils—the soil group and the physical characteristics.

The agricultural lands of Ontario can be divided into three groups—the sand and sandy loam soils, the clay and clay loam soils and the general purpose group. Both the sand and clay groups are generally used for specific crops while the general purpose soils may be used for the cultivation of a wide range of crops or for the raising of livestock.

(i) *Sand and Sandy Loam.* The texture, drainage, fertility, workability and climatic advantages make this group of soils particularly suitable for such "cash" or market garden crops as fruit, berries, vegetables, tobacco, etc.

(ii) *Clay and Clay Loam.* This group of soils is well suited to the production of such crops as tomatoes, sugar beets, soy beans, canning vegetables, sweet and grain corn and fruits. Here again the advantages of this group include texture, fertility and climatic conditions.

(iii) The third group involves soils that are used mainly for the production of grain, grasses (hay, clover, alfalfa), silage, corn, etc. These soils can be a combination of group 1 or group 2 but the possible uses to which they can be put are limited by climatic conditions.

Each of these broad groups is divided into five sub-groups or soil types that reflect the texture, i.e. the amount of sand or silt or clay in the soil:

(i) Sand.
The soil contains a high proportion of sand. It is generally porous and open. It has a coarse, gritty feel;

(ii) Sandy spot phase and sandy phase.
The soil contains coarse sand or gravelly shallows or knolls;

(iii) Sandy loam.
The soil is predominantly sand with some silt and clay. It feels gritty but is not as loose as sand;

(iv) Loam, silt loam.
The soil contains approximately equal proportions of sand, silt and clay. Loams feel somewhat gritty and are slightly plastic when wet. Silt loam feels soft and floury when dry, and slippery when wet;

(v) Clay loam.
The soil contains enough clay to be sticky when wet. It is often lumpy when dry;

(vi) Clay.
The soil contains a high proportion of small soil particles. It has a smooth feel and is sticky when moist. It is hard and cloddy when dry.

Physical Characteristics

Regardless of the soil texture or climatic conditions, agricultural productivity is strongly influenced by the physical character-

istics of the soil. Adverse factors such as rough topography or susceptibility to flooding, may inhibit or preclude the cultivation of fertile areas that have favourable climatic conditions.

Topography. Topography refers to the natural contours of the land; it is divided into five parts depending on the steepness of the slope.

(a) Level (0-2% slope).
The land is flat or very nearly so with a maximum vertical slope of two feet per 100 feet of horizontal distance.

(b) Gently Sloping (3-6% slope).
Generally there are no abrupt changes in steepness or direction of slope. Erosion is a minor hazard.

(c) Rolling (7-12% slope).
The land has considerable slope, usually with some irregularity, although there is no serious handicap to farm machinery. There is a moderate erosion hazard.

(d) Hilly (13-20% slope).
Machinery can be used on hilly land but only with difficulty. There is a substantial erosion hazard.

(e) Steep (over 20% slope).
The land is not suited for the extensive use of farm machinery. It is susceptible to severe erosion hazard.

Erosion. Erosion refers to the actual loss of soil by water and wind. There are five degrees of erosion.

(a) None
There is no noticeable erosion.

(b) Slight
Up to one-half of the topsoil has been removed by erosion.

(c) Moderate
Most of the surface soil has been removed by erosion. There is some 'B' horizon subsurface material in the cultivated layer.

(d) Severe
All of the surface soil has been removed. The subsoil ('C' horizon) predominates in the cultivated layer.

(e) Very severe
The land is marked with gullies too deep and too numerous to permit regular cultivation of the land.

Stoniness. Stoniness refers to the density of stones in the surface soil; it may be classified in one of five categories.

(a) Stone free
Soil with practically no stones in the surface soil may be regarded as stone free.

(b) Slightly stony
There is some stone in the surface soil but not in sufficient quantities to interfere with cultivation.

(c) Moderately stony
There is sufficient stone to interfere with cultivation of some crops and the use of certain machinery. However, the land can be used for regular rotations.

(d) Very stony
There is too much stone to allow cultivation but the land is suitable for pasture.

(e) Excessively stony
The land is too stony for use as pasture but is suitable for trees.

Drainage. Drainage refers to the ease with which water and air permeate the soil and to the height of the water table; it can be analyzed under four headings.

(a) Good
The layers within soil are well defined, uniform and bright reddish or yellowish-brown. The movement of air and water through the soil is not restricted. This is the ideal condition for most crops. Soils having the characteristics described for fair or poor drainage may be included in this class if they have been artificially drained.

(b) Fair
The surface soil is darker than in well drained soils. The underlying layers are dull yellowish-brown or mottled with reddish-brown, and less well drained than those well drained soils. There are fairly favourable conditions for air and water movement.

(c) Poor
The surface soil is very dark and the underlying layers are dull grey with reddish-brown blotches. Water and air movement through the soil is restricted.

(d) Very Poor
The surface soil is black, the underlying layer is a uniform dull bluish-grey and the soil remains wet for long periods of time. These areas are generally swamps or bogs.

Depth to Bedrock. The depth in this instance refers to the distance from the surface of the soil to the underlying bedrock. Soils where this distance is very small (less than one foot) are often susceptible to erosion and may lack topsoil.

Susceptibility to Flooding. Flooding may arise from periodic overflows from streams or rivers or from seasonal storms.

Rating of Soils (Land Grading System)

The soil rating chart is a guide to be used when valuing farm lands. It incorporates a classification of soil groups according to their soil types and their various physical characteristics. The chart is based on a point system with so many points awarded to every area of each separate soil type on the farm. The ultimate area scores 100 points, while inferior areas score less. The lower the number of points awarded to an area, the more inferior is that area for agricultural purposes.

FIGURE 10

SOIL RATING CHART

I. Soil Groups and Soil Types

SAND (SPECIAL CROPS)	
10	Sand Spot Phase
5	Fine Sandy Loam
0	Sandy Loam
5	Sandy Clay Loam
10	Clay Loam

CLAY	
10	Sand or Sandy Phase
5	Sandy Loam
0	Clay Loam
5	Silt Loam
10	Clay

GENERAL PURPOSE	
10	Sand or Sandy Phase
5	Sandy Loam
0	Loam
5	Clay Loam
10	Clay

II. Physical Characteristics

TOPOGRAPHY	
0	Level
5	Gently Sloping
10	Rolling
20	Hilly
40	Steep

EROSION	
0	None
5	Slight
10	Moderate
20	Severe
30	Very Severe

STONINESS	
0	Stone Free
5	Slightly Stony
10	Mod. Stone
25	Very Stony
40	Excessively Stony

DRAINAGE	
0	Good
10	Fair
25	Poor
40	Very Poor

DEPTH TO BEDROCK	
0	Deep — 3′
20	Mod. Deep — 2′—3′
40	Shallow — 1′—2′
65	Very Shallow — 1′

FLOODING	
0	No Flooding
10	Occasional Flooding
20	Seasonal Flooding
30	Excessive Flooding

The initial step when using the chart is to classify the farm according to one of the three soil groups—sand, clay or general purpose.

Within that broad group each area of the various soil types is identified, recorded and measured (generally to the nearest five acres). In the case of clay, for example, the areas will be classified under sand or sandy phase, sandy loam, clay loam, silt loam or clay.

Each area is then classified according to its physical characteristics under the six headings—topography, erosion, stoniness, drainage, depth to bedrock and flooding.

The points reflecting the relative merits of the soil types and physical characteristics, which are recorded to the left of each classification, are added together for each area.

This sum is deducted from 100, the maximum value an area can achieve, to indicate the relative worth of each area for agricultural purposes, i.e. its soil rating.

For purposes of comparison, it is possible to grade each area on the basis of the agricultural land grading system set out below. If the grading system is used, areas of different soil types and/or physical characteristics can be compared on the basis of their land grades. Without the application of the land grading system, the possibilities of comparisons are much more restricted as they would have to be based on the actual characteristics of the land.

Grade I: 100-95	Land of this class has good drainage, loam texture, and is nearly level. No physical hazards to high level production of all farm crops.
Grade II: 90-80	This land is subject to moderate limitations in use. Its limitations may be fair drainage, rolling topography, moderate erosion, moderate stoniness, or a combination of two or more factors.
Grade III: 75-65	Land of this class has the same handicap characteristics as Grade II land, but to a greater extent. Grade III land, although suitable for general farm crops, requires more adequate protection or treatment than either Grade I or Grade II land.
Grade IV: 60-55	This class of land is subject to severe limitations for use in crop production. It is too susceptible to erosion, too stony, or too poorly drained to be cultivated frequently.

Grade V: 50-40	Land of this class is generally unsuited to cultivation but can be used for grazing, forestry and wildlife. It is subject to limitations more severe than those of Grade IV.
Grade VI: 35-25	This land should be kept in permanent vegetation because of steepness of slope, severe erosion, shallow soil or other features that make cultivation impractical. Suitable for moderate grazing and forestry.
Grade VII: 20-10	Land of this grade is subject to severe limitations. The use of this land should be restricted to forestry or very limited grazing.
Grade VIII: less than 10	Rock outcrop, quarries, peat bogs and other areas not suited to commercial forestry but may be suitable for wildlife, recreation, etc. Land that is evaluated as Grade VIII is regarded as non-agricultural.

Once the lands have been rated and graded, they can be valued relatively easily on a per acre basis. The rates per acre for each grade of land are established on the basis of farm sales or, in the case of cash crops, by capitalizing the net income.

Appendix B

BUILDING CLASSIFICATION FACTORS INCORPORATED IN THE HANDBOOK OF COST FACTORS

The classification system in the *Handbook of Cost Factors* is composed of five factors:

(i) Design;
(ii) Character of construction;
(iii) Quality of construction;
(iv) Shape;
(v) Size.

Design. There are five major land uses each of which incorporate different features of design. These are:

(i) Residential;
(ii) Commercial;
(iii) Industrial;
(iv) Agricultural;
(v) Institutional.

Each major design classification can be broken down into a number of sub-classifications. For example, residential may be sub-classified as follows:

(i) Single family detached;
(ii) Semi-detached;
(iii) row housing;
(iv) Multi-family (2 or more units per building).

Character of Construction. The four classifications for character of construction are:

Class "A": Buildings have fireproofed self-supporting structural steel frames with reinforced concrete or masonry floors and roofs.

Class "B": Buildings have fire-resistive reinforced concrete frames and concrete or masonry floors and roofs.

Class "C": Buildings have masonry or concrete exterior bearing walls and wood or open steel roofs and floors.

Class "D": Buildings have combustible wood or open steel frame, wall, roof and floor structures.

The characteristics that indicate into which classification a building should be placed are:

Class "A":	Framing:	Structural steel columns and beams fireproofed with masonry, concrete, plaster or other incombustible material.
	Floor:	Concrete or concrete covered steel deck, fireproofed.
	Roof:	Formed concrete, precast slabs, concrete or gypsum on steel deck, fireproofed.
	Walls:	Non-bearing cavity or curtain walls, masonry, concrete, metal panels, stone.
Class "B":	Framing:	Reinforced concrete columns and beams.
	Floor:	Concrete or concrete covered steel deck, fireproofed.
	Roof:	Formed concrete, precast slabs, concrete or gypsum on steel deck, fireproofed.
	Walls:	Non-bearing cavity or curtain walls, masonry, concrete, metal panels, stone.
Class "C":	Framing:	Masonry or concrete load-bearing walls with or without pilasters or non load-bearing walls with concrete, wood or steel supporting the load.
	Floor:	Wood or steel floor joists or slab on ground.
	Roof:	Wood or steel joists, wood or steel deck.
	Walls:	Brick or concrete block masonry, tilt-up, formed concrete.
Class "D":	Framing:	Wood or steel studs in bearing wall, wood or steel skeleton frame.
	Floor:	Wood or steel floor joists or slab on ground.
	Roof:	Wood or steel joists, wood or steel deck.
	Walls:	Almost any material except masonry or concrete. May have masonry veneer on steel or wood framing.

Quality of Construction. Once a building has been classified according to character of construction, it is then classified on the basis of the quality of materials used and of labour employed in its construction. For example, a single family detached Class "D" residential structure would fall into one of the following sub-classes:

Sub-Class 1: Single wall inexpensive cabins and cottages.

Sub-Class 2: The better built single wall cabins and cottages having some interior finish and fixtures.

Sub-Class 3: A cheap double wall structure below minimum building code requirements, either predating code requirements or found in areas where no code exists.

Sub-Class 4: Minimum quality structure permitted under minimum building code requirements—not permitted under The National Building Code.

Sub-Class 5: Minimum quality structure permitted under The National Building Code — usually attractive but cheap houses.

Sub-Class 6: Average good quality construction by a reliable contractor. The building complies in all respects to The National Building Code.

Sub-Class 7: Average good quality construction with some special features such as extra panelling and better quality fixtures.

Sub-Class 8: Above average quality construction, usually designed and supervised by an architect. This building is usually custom built and includes superior features.

Sub-Class 9: Superior quality construction and interior finish with high quality materials and workmanship, architecturally designed and supervised.

Sub-Class 10: Highest quality materials and workmanship, including a number of special features and refinements, architecturally designed and supervised.

Shape. There are four shape classifications used in the *Handbook of Cost Factors:*

Shape "A": Normally, a rectangular building with single roof line.

Shape "B": Normally, a building with six corners and more than one roof line.

Shape "C": Normally, a building with eight corners and a cut up roof.

Shape "D": All buildings that do not conform to the specifications of any of the previous categories.

Size. Size, in this system, refers to the floor area of the building as measured from the outside.

Summary

The rates used in this summary are examples and do *not* necessarily reflect the rates in the *Handbook of Cost Factors.*

Design. If the character of construction, quality of construction, shape and size are constant, the rates per square foot will vary in accordance with the original design of the building.

Design	Character	Quality	Shape	Size	Rate
residential	C	6	A	2000 Sq. Ft.	$ 9.16
industrial	C	6	A	2000 Sq. Ft.	$ 7.72
commercial	C	6	A	2000 Sq. Ft.	$12.61

Character of Construction. If the design, quality of construction, shape and size are constant, a difference in the character of construction will lead to a difference in the rate.

Design	Character	Quality	Shape	Size	Rate
residential	C	6	A	2000 Sq. Ft.	$ 9.16
residential	D	6	A	2000 Sq. Ft.	$ 8.39

Quality of Construction. When all the other factors are held constant, a difference in quality of construction will also lead to a difference in rate.

Design	Character	Quality	Shape	Size	Rate
residential	C	6	A	2000 Sq. Ft.	$ 9.16
residential	C	7	A	2000 Sq. Ft.	$10.67

Shape. Again, other factors remaining the same, variations in shape lead to rate differentials.

Design	Character	Quality	Shape	Size	Rate
residential	C	6	A	2000 Sq. Ft.	$ 9.16
residential	C	6	C	2000 Sq. Ft.	$ 9.58

Size. Finally, a difference in size only will lead to a rate differential.

Design	Character	Quality	Shape	Size	Rate
residential	C	6	A	2000 Sq. Ft.	$ 9.16
residential	C	6	A	1500 Sq. Ft.	$ 9.81

Although the rates in the *Handbook* were designed to take account of as many variables as possible, it was not practicable to accommodate all possible variations. Undoubtedly assessors will want to estimate the replacement cost new of buildings that deviate from the specifications established for the classifications in which they normally fall. This problem of unusual features can be largely overcome by utilizing the various supplemental cost schedules included in the *Handbook*.

APPENDIX C

ADJUSTING COST FACTORS BY MEANS OF LOCAL MODIFIERS

It is impossible to prepare a manual of construction costs that can be applied across a province as large as Ontario without making adjustments for areal cost differentials. Furthermore, costs of construction vary over time as well as from one area to another. These variations in cost are largely the result of differences in:

(i) Costs of materials;

(ii) Wage rates in the construction industry;

(iii) The efficiency of labour and the degree to which technological advances are incorporated into construction methods.

The costs of construction in any municipality at a particular time are determined by these factors. The rates in the *Handbook of Cost Factors* are predicated on costs in the Metropolitan Toronto area as of the summer of 1966.[1] Therefore, in order to reflect current conditions in his municipality it is necessary for the assessor to adjust the rates in the *Handbook*.

There are several methods of adjusting cost factors available for assessors, the best known perhaps being indices of materials and labour costs. These methods were rejected for several reasons:

(i) They are time-consuming to prepare;

(ii) They are cumbersome and difficult to apply;

(iii) They provide only an estimate of the replacement cost new or the reproduction cost new of a building rather than an estimate of its market value new.

The method of adjustment recommended by the Department of Municipal Affairs and used in this manual is based on an analysis of

[1]The *Handbook* rates will always be based on Metropolitan Toronto costs although the base period will be revised upward periodically to remain more in accord with current conditions. The rates themselves are based on information obtained through interviews with contractors and suppliers and verified by sales of new buildings.

local sales. The advantages of using a local modifier based on sales to adjust costs are:

(i) It is relatively easy to prepare;
(ii) It is easy to apply, provided the *Handbook of Cost Factors* is used;
(iii) It reflects current conditions in the local real estate market rather than in the local construction industry;
(iv) It provides an estimate of the market value of a particular class of building.

The last point bears expansion. The local modifier shows the relationship between the cost of constructing a particular class of building in Metropolitan Toronto at a given period of time, and the probable sale price of a new building of that class in another area at another time. Therefore, the local modifier provides an estimate of market value new; it does not provide an estimate of replacement cost new or reproduction cost new or any other cost.

Whenever the assessor is valuing a building that has suffered from depreciation, he must deduct an allowance for any loss of value from the estimated market value new. The net figure, after an allowance for depreciation has been deducted, is an estimate of the market value of the building in its current condition.

Calculation of a Local Modifier

(i) Record all property sales that include recently-constructed buildings. Sales of buildings that were constructed more than two years before the modifier is calculated should not be included in the analysis.
(ii) Reject those sales not typical of current market transactions. Alternatively, depending on the size of the sample, adjust the unusual sales to reflect normal transactions.
(iii) Estimate the sale value of each building by deducting the acquisition cost of the land from the sale price of the property.
(iv) Inspect and classify each building according to the criteria set out in the *Handbook of Cost Factors*.
(v) Apply the appropriate rates to each building to obtain estimates of their construction costs if they had been built in Metropolitan Toronto in the base period.
(vi) Calculate the ratio of the estimated sale value of the estimated cost of construction for each building.
(vii) Select the median ratio.
(viii) The median ratio is the local modifier for the municipality for that year or until market conditions change sufficiently that a new modifier is required.

Example 1

Age of building — 6 months	
Sale price and estimated market value of the property	$20,000
Acquisition cost of the land	6,300
Estimated sale value of the building	$13,700
Class of building — C-6-A	
Estimated construction cost	$13,000
Ratio $\frac{13,700}{13,000}$	105.4

Repeat this procedure for each building included in the sample.

Assume there are six other buildings and their ratios are: 99.8, 103.4, 107.8, 100.6, 101.7 and 103.2.
The median ratio is 103.2.
The local modifier is 103.

Example 2

Age of building—4 months	
Sale price and estimated market value of the property	$14,500
Acquisition cost of the land	3,000
Estimated sale value of the building	$11,500
Class of building—D-6-A	
Estimated construction cost	$10,600
Ratio $\frac{11,500}{10,600}$	108.5

Assume there are eight other buildings and their ratios are: 102.4, 110.7, 103.3, 107.6, 111.5, 106.1, 102.8 and 108.4.
The median ratio is 107.6
The local modifier is 108

The local modifier is probably the most critical aspect of the classification system; it must be prepared carefully and checked continually. All sales included in the analysis should be typical market transactions or adjusted to reflect normal transactions. All buildings must be classified accurately. Any errors in the analysis of sales or in the classification of buildings will produce invalid modifiers.

The validity of the local modifier also depends on the number of sales that are analyzed when it is constructed. The more sales that are examined, the greater is the validity of the modifier. An assessor should not hesitate to supplement his sales data in adjacent municipalities, provided that market conditions there are similar to those in his own municipality.

Appendix D

CAPITALIZATION

In a general sense capitalization is a mathematical technique by which a future money payment, or series of future payments, is converted into a measure of present value. The present value of the future payment or payments is often referred to as the capital value of the payment(s). For purposes of property valuation the future money payments are the anticipated net incomes earned by the property, and their present value is the capitalized earning ability, or estimated market value, of the property. The capitalization process can be expressed by the formula:

$$V = \frac{I}{R}$$ where V = present value (estimated market value)
I = future payments (estimated net income)
R = capitalization rate.

This basic formula may take several forms:

if, (a) income divided by the capitalization rate equals present value;

then, (b) present value multiplied by the capitalization rate equals income;

and, (c) income divided by the present value equals the capitalization rate.

Symbolically:

(a) becomes $V = \frac{I}{R}$;

(b) becomes $V \times R = I$;

(c) becomes $\frac{I}{V} = R$.

The rationale for capitalization of future money payments is that payments to be received in the future are less valuable than current payments and that the value of future payments decreases as the interval between the present and the time of payment increases. Consequently, the future payments are discounted to indicate how much the right to receive the future payments is worth today. The present worth of a future payment, or series of future payments,

depends on the rate of interest at which the payments are discounted and on the periods of time that elapse before they are received. Since it is necessary to give up current purchasing power, i.e. money income, to receive income in the future, the rate of interest at which these future payments are discounted depends on the value one places upon current, as opposed to future, income.

Tables have been prepared to reflect both the rate of interest at which future payments are discounted and the interval of time before they are received. The present worth tables included in this appendix indicate the present worth of a single payment to be received 't' years in the future and discounted at 'r' rate of interest, and the present worth of a series of 'n' payments to be received at equal intervals up to 't' years in the future and discounted at 'r' rate of interest.

Some capitalization formulae used in valuation work apply the basic capitalization equation, $V = \frac{I}{R}$, while others are based on the concept of present worth. Present worth is used synonymously with market value and a present worth factor, for either a single future payment or a series of future payments, is simply the reciprocal of the capitalization rate. Whereas the capitalization formula is $V = \frac{I}{R}$, the present worth formula is P.W. (i.e. V) $= I \times F$. This formula may also be converted to other forms, i.e.: $F = \frac{P.W.}{I}$ or $I = \frac{P.W.}{F}$.

Calculation of Present Worth of $1.00

Given:
(i) Payment =$1,500
(ii) To be received in 25 years
(iii) Discounted at the rate of 7.5%

Procedure:
(i) Record the present worth factor for a single payment discounted at the rate of 7.5% which will be received in 25 years. Factor=.1640

(ii) P.W.=I×F where: P.W. =Present Worth
=$1,500×.1640 I=Payment
=$246 F=Present Worth Factor

The present worth of $1,500, to be received in 25 years and discounted at the rate of 7.5%, is $246. That is, an individual would pay no more than $246 today for the right to receive a payment of $1,500 in 25 years when the rate of discount is 7.5%. If the discount rate were greater than 7.5% an individual would pay

something less than $246. If the rate were less than 7.5%, he would be willing to pay more. Similarly, if the rate remained constant at 7.5%, an individual would be willing to pay more than $246 if he could receive $1,500 in less than 25 years; but would not be willing to pay as much as $246 if he had to wait more than 25 years.

Calculation of Present Worth of $1.00 per Annum

I. *Given:*
(i) Annual payment =$1,000
(ii) Number of payments 15
(iii) 1st payment to be received at the end of 1st year
(iv) Discounted at the rate of 8%

Procedure:
(i) Record the present worth factor for a series of payments, discounted at the rate of 8%, which will be received for 15 years.
Factor=8.56

(ii) P.W.=I×F where: I=$1,000
=$1,000×8.56 F=8.56
=$8,560

The present worth of a series of 15 annual payments of $1,000, the first payment to be received at the end of the first year, and discounted at the rate of 8%, is $8,560.

II. *Given:*
(i) Annual payment =$1,000
(ii) Number of payments 15
(iii) 1st payment to be received at the end of the 5th year
(iv) Discounted at the rate of 8%

Procedure:
(i) Record the present worth factor for a series of payments, discounted at the rate of 8%, which will be received for 15 years.
Factor=8.56

(ii) Record the present worth factor for a single payment, discounted at the rate of 8%, which will be received in 4 years.
Factor=6.7350

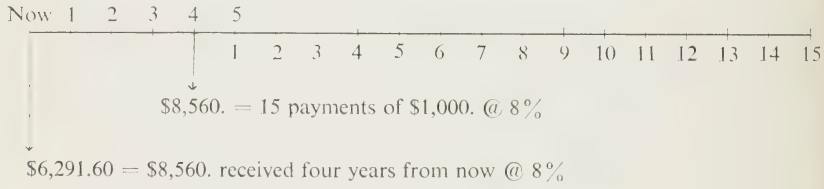
(iii) Present worth of the series of payments one year before the first payment is to be received is:
P.W.=I×F where I=$1,000
=$1,000×$8.56 F=8.56
=$8,560

(iv) Present worth of $8,560 to be received in 4 years is:
P.W.=I×F where I=$8,560
=$8,560×.7350 F=.7350
=$6,291.60

In the first example, the first payment is received at the end of the first year; in the second example, at the end of the fifth year. The sum of $8,560 is the amount an individual is willing to pay for the right to receive an income of $1,000 for 15 years when the interest rate is 8% (i.e. the income is discounted at the rate of 8%). That is, he is indifferent to whether he receives $8,560 now or an annuity of $1,000 with the first payment to be received at the end of one year.

However, if the first payment will not be made for five years, as in Example II, an investor is not willing to pay $8,560 for the annuity. The amount he is willing to pay depends on the present worth of $8,560 to be received four years from now, i.e. one year before the first payment of the annuity.[1]

Diagrammatically:



Income Premises

The assessor must make certain assumptions about the shape and the duration of the anticipated future income stream before he can select a capitalization formula. Appraisal literature is replete with discussions of various income premises, and their corresponding capitalization formulae, that may be applied by the appraiser. Many of these are more sophisticated than the assessor requires or incorporate variables, such as anticipated capital gains, he must disregard in his work. There are four income premises that will serve the assessor's needs.

(i) A single payment;
(ii) A level perpetual series of payments;
(iii) A level terminal series of payments;
(iv) A straight-line declining terminal series of payments.

[1]Since the percent worth of the annuity is calculated as of one year before the first payment, the investor calculates the current present worth of the annuity on the same basis.

A Single Payment

The property reversion technique of capitalization requires that the assessor determine the reversionary value of the property at the end of its useful life. This is the sole occasion when he may be obliged to capitalize a single income payment—in this case the reversionary value of the property. To capitalize a single future payment, the assessor applies a present worth of one factor.

For example:

Given:
(i) Remaining useful life of the property =50 years
(ii) Reversionary property value =$15,000
(iii) Capitalization rate =9%

Procedure:
(i) Record the present worth factor for a single payment to be received 50 years from now at a discount rate of 9%
Factor=.0135

(ii) P.W. of reversionary land value is:
P.W.=I×F where I=$15,000
=$15,000×.0135 F=.0135
=$202.50 rounded to $200

The estimated current value of the reversion is $200.

A Level Perpetual Series of Payments

Land is regarded as a non-wasting asset, that is, it is assumed to have an infinite useful life. If the land produces an income, its value can be estimated by the formula $V = \frac{I}{R}$. The capitalization rate includes an allowance for the estimated yield rate and for the property tax; it does not include an allowance for amortization as there is no need to provide for the recovery of the investment in a non-wasting asset such as land. An assessor valuing unimproved land, or using the land residual technique to value developed land, would apply the formula for capitalizing a level perpetual series of income payments.

For example:

Given:
(i) Net income from a unit of unimproved land =$3,000
(ii) Allowance for property tax =2%
(iii) Yield rate =4%

Procedure: (i) Calculate the estimated market value using the formula:

$$V = \frac{I}{R}$$

where I=$3,000
R=2%+4%=6%

$$= \frac{\$3,000}{.06}$$

$$= \$50,000$$

The estimated market value of the unit of unimproved land is $50,000.

A Level Terminal Series of Payments

In some instances, particularly when the estimated useful life of a property is short, an assessor feels that the income produced by the property will remain at a constant level during the remainder of its useful life. If this is the case, he estimates the market value of the buildings by using the present worth formula P.W. $= I \times F$. The present worth factor is selected from the present worth of $1.00 per annum table on the basis of the estimated number of future payments and the discount rate.

The discount rate includes an allowance for the yield rate and for the property tax rate but not for amortization of the investment. Amortization is provided for when the number of future income payments is estimated. That is, the choice of a particular remaining useful life assumes implicitly a certain rate of amortization. An increase in the estimate of remaining useful life lowers this implicit rate of amortization and thus increases the estimated value; conversely, a decrease in the estimated useful life increases this rate of amortization and lowers the value estimate.

For example:

Given:
(i) Net income produced by the property =$3,000
(ii) Yield rate =4.5%
(iii) Property tax allowance =2%
(iv) Remaining useful life =10 years

Procedure:
(i) Record the present worth factor for a series of 10 payments at a discount rate of 6.5% (4.5%+2%)
Factor=7.19

(ii) Calculate the present worth of net income using the formula:
P.W.=I×F where I=$3,000
=$3,000×7.19 F=7.19
=$21,570 rounded to $21,600

The estimated current market value of the property is $21,600. This value will decrease each year as the investment in the property is recovered, until at the end of its estimated useful life its value is nil. The amounts that are allocated for amortization of the investment in the property increase throughout the asset's useful life. Since the income is estimated to be constant throughout the useful life of the property, the amounts allocated to the yield rate and the property taxes decrease each year to compensate for the increase in the amounts allocated to amortization. The decline in amounts allocated to the yield rate and the property tax allowance is only to be expected as they are based on a constant percentage of the property's estimated value which is itself declining.

A Straight-Line Declining Terminal Series of Payment

Undoubtedly the premise of a straight-line declining terminal income is the most appropriate for the majority of assessment valuations. Even when it is assumed that the total revenue produced by a property is constant, it is clear that as a property ages and the expenses of maintaining the property increase, the net income decreases. It may well be difficult to accept these assumptions as well as the assumption that income declines by a constant amount. However, they appear to be as realistic as any other set of assumptions. Furthermore, the relatively simple calculations associated with the straight-line declining income premise has made it widely accepted by investors. Consequently, the assessor is justified in applying the premise in most instances.

The declining income premise uses the basic capitalization formula $V = \frac{I}{R}$. When the formula is applied to land only, the capitalization rate includes an allowance for the yield rate and the property tax rate; when it is applied to buildings or to the entire property, as in the property reversion technique, the capitalization rate includes an allowance for amortization of the investment as well as for the yield rate and the property tax.

The declining terminal income premise differs from the level terminal premise in that it assumes the amount allocated to amortization each year is constant and equals the estimated current value of the investment multiplied by the reciprocal of the remaining useful

life. The annual decline in income is also constant and equals the annual amortization payment multiplied by the capitalization rate exclusive of the amortization allowance.

For example:

Given:

(i) Net income produced by property =$3,000
(ii) Yield rate =4.5%
(iii) Property tax allowance =2%
(iv) Remaining useful life =10 years

Procedure:

(i) Calculate the amortization allowance =1/10=10%
(ii) Calculate the capitalization rate =10%+4.5%+2% =16.5%
(iii) Calculate the estimated market value using the formula:

$$V=\frac{I}{R} \qquad \text{where } I=\$3{,}000,\ R=16.5\%$$

$$=\frac{\$3{,}000}{16.5}$$

=$18,182 rounded to $18,200.

The estimated market value of the property is $18,200. As was noted earlier, the amount allocated for amortization remains constant, in this case equal to $18,200 × .10 = $1,820. The annual decline in income is solely the result of the decline in the amounts allowed for the payment of the property tax and for interest on the unrecovered capital. The amount allocated to the payment for the yield rate and for the property tax diminishes each year in line with the decline in the uncovered capital investment. In the example the annual decline is equal to $1,820 × .065 = $118.

TABLE 17

THE PRESENT VALUE OF $1.

YEARS	6%	6½%	7%	YEARS	6%	6½%	7%
1	.9434	.9390	.9346	31	.1643	.1420	.1228
2	.8900	.8817	.8734	32	.1550	.1333	.1147
3	.8396	.8279	.8163	33	.1462	.1252	.1072
4	.7921	.7773	.7629	34	.1379	.1175	.1002
5	.7473	.7299	.7130	35	.1301	.1104	.0937
6	.7050	.6853	.6663	36	.1227	.1036	.0875
7	.6651	.6435	.6228	37	.1158	.0973	.0818
8	.6274	.6042	.5820	38	.1092	.0914	.0765
9	.5919	.5674	.5439	39	.1031	.1858	.0715
10	.5584	.5327	.5084	40	.0972	.0805	.0668
11	.5268	.5002	.4751	41	.0917	.0756	.0624
12	.4970	.4697	.4440	42	.0865	.0710	.0583
13	.4688	.4410	.4150	43	.0816	.0667	.0545
14	.4423	.4141	.3878	44	.0770	.0626	.0510
15	.4173	.3888	.3625	45	.0727	.0588	.0476
16	.3937	.3651	.3387	46	.0685	.0552	.0445
17	.3714	.3428	.3166	47	.0647	.0518	.0416
18	.3503	.3219	.2959	48	.0610	.0487	.0389
19	.3305	.3022	.2765	49	.0576	.0457	.0363
20	.3118	.2838	.2584	50	.0543	.0429	.0340
21	.2942	.2665	.2415	51	.0512	.0403	.0317
22	.2775	.2502	.2257	52	.0483	.0378	.0297
23	.2618	.2349	.2110	53	.0456	.0355	.0277
24	.2470	.2206	.1972	54	.0430	.0334	.0259
25	.2330	.2071	.1843	55	.0406	.0313	.0242
26	.2198	.1945	.1722	56	.0383	.0294	.0226
27	.2074	.1826	.1609	57	.0361	.0276	.0211
28	.1956	.1715	.1504	58	.0341	.0259	.0198
29	.1846	.1610	.1406	59	.0321	.0243	.0185
30	.1741	.1512	.1314	60	.0303	.0229	.0173

TABLE 17—Continued

THE PRESENT VALUE OF $1.

YEARS	7½%	8%	8½%	YEARS	7½%	8%	8½%
1	.9302	.9259	.9217	31	.1063	.0920	.0797
2	.8653	.8573	.8495	32	.0988	.0852	.0735
3	.8050	.7938	.7829	33	.0919	.0789	.0677
4	.7488	.7350	.7216	34	.0855	.0731	.0624
5	.6966	.6806	.6651	35	.0796	.0676	.0575
6	.6480	.6302	.6130	36	.0740	.0626	.0530
7	.6028	.5835	.5649	37	.0689	.0580	.0489
8	.5607	.5403	.5207	38	.0640	.0537	.0451
9	.5216	.5003	.4799	39	.0596	.0497	.0415
10	.4852	.4632	.4423	40	.0554	.0460	.0383
11	.4513	.4289	.4076	41	.0516	.0426	.0353
12	.4199	.3971	.3757	42	.0480	.0395	.0325
13	.3906	.3677	.3463	43	.0446	.0365	.0300
14	.3633	.3405	.3191	44	.0415	.0338	.0276
15	.3380	.3152	.2941	45	.0386	.0313	.0255
16	.3144	.2919	.2711	46	.0359	.0290	.0235
17	.2925	.2703	.2499	47	.0335	.0269	.0216
18	.2721	.2503	.2303	48	.0311	.0249	.0199
19	.2531	.2317	.2122	49	.0289	.0230	.0184
20	.2354	.2146	.1956	50	.0269	.0213	.0169
21	.2190	.1987	.1803	51	.0250	.0197	.0156
22	.2037	.1839	.1662	52	.0233	.0183	.0144
23	.1895	.1703	.1532	53	.0216	.0169	.0133
24	.1763	.1577	.1412	54	.0201	.0157	.0122
25	.1640	.1460	.1301	55	.0187	.0145	.0113
26	.1525	.1352	.1199	56	.0174	.0134	.0104
27	.1419	.1252	.1105	57	.0162	.0124	.0096
28	.1320	.1159	.1019	58	.0151	.0115	.0088
29	.1228	.1073	.0939	59	.0140	.0107	.0081
30	.1142	.0994	.0865	60	.0131	.0099	.0075

TABLE 17—Continued

THE PRESENT VALUE OF $1.

YEARS	9%	9½%	10%	YEARS	9%	9½%	10%
1	.9174	.9132	.9091	31	.0692	.0600	.0521
2	.8417	.8340	.8265	32	.0634	.0548	.0474
3	.7722	.7617	.7513	33	.0582	.0500	.0431
4	.7084	.6956	.6830	34	.0534	.0457	.0391
5	.6499	.6352	.6209	35	.0490	.0417	.0356
6	.5963	.5801	.5645	36	.0449	.0381	.0324
7	.5470	.5298	.5132	37	.0412	.0348	.0294
8	.5019	.4838	.4665	38	.0378	.0318	.0267
9	.4604	.4419	.4241	39	.0347	.0290	.0243
10	.4224	.4035	.3855	40	.0318	.0265	.0221
11	.3875	.3685	.3505	41	.0292	.0242	.0201
12	.3555	.3365	.3186	42	.0268	.0221	.0183
13	.3262	.3073	.2897	43	.0246	.0202	.0166
14	.2993	.2807	.2633	44	.0226	.0184	.0151
15	.2745	.2563	.2394	45	.0207	.0168	.0137
16	.2519	.2341	.2176	46	.0190	.0154	.0125
17	.2311	.2138	.1978	47	.0174	.0141	.0113
18	.2120	.1952	.1799	48	.0160	.0128	.0103
19	.1945	.1783	.1635	49	.0147	.0117	.0094
20	.1784	.1628	.1486	50	.0135	.0107	.0085
21	.1637	.1487	.1351	51	.0123	.0098	.0077
22	.1502	.1358	.1229	52	.0113	.0089	.0070
23	.1378	.1240	.1117	53	.0104	.0082	.0064
24	.1264	.1133	.1015	54	.0095	.0074	.0058
25	.1160	.1034	.0923	55	.0087	.0068	.0053
26	.1064	.0945	.0839	56	.0080	.0062	.0048
27	.0976	.0863	.0763	57	.0074	.0057	.0044
28	.0896	.0788	.0693	58	.0068	.0052	.0040
29	.0822	.0719	.0630	59	.0062	.0047	.0036
30	.0754	.0657	.0573	60	.0057	.0043	.0033

TABLE 17—Continued

THE PRESENT VALUE OF $1.

YEARS	10½%	11%	12%	YEARS	10½%	11%	12%
1	.9050	.9009	.8929	31	.0453	.0394	.0298
2	.8190	.8116	.7972	32	.0410	.0355	.0266
3	.7412	.7312	.7118	33	.0371	.0319	.0238
4	.6707	.6587	.6355	34	.0336	.0288	.0212
5	.6070	.5935	.5674	35	.0304	.0259	.0189
6	.5493	.5346	.5066	36	.0275	.0234	.0169
7	.4971	.4817	.4524	37	.0249	.0210	.0151
8	.4499	.4339	.4039	38	.0225	.0190	.0135
9	.4071	.3909	.3606	39	.0204	.0171	.0120
10	.3685	.3522	.3220	40	.0184	.0154	.0108
11	.3334	.3173	.2875	41	.0167	.0139	.0096
12	.3018	.2858	.2567	42	.0151	.0125	.0086
13	.2731	.2575	.2292	43	.0137	.0113	.0077
14	.2471	.2320	.2046	44	.0124	.0101	.0068
15	.2237	.2090	.1827	45	.0112	.0091	.0061
16	.2024	.1883	.1631	46	.0101	.0082	.0054
17	.1832	.1696	.1456	47	.0092	.0074	.0049
18	.1658	.1528	.1300	48	.0083	.0067	.0043
19	.1500	.1377	.1161	49	.0075	.0060	.0039
20	.1358	.1240	.1037	50	.0068	.0054	.0035
21	.1229	.1117	.0926	51	.0061	.0049	.0031
22	.1112	.1007	.0826	52	.0056	.0044	.0028
23	.1006	.0907	.0738	53	.0050	.0040	.0025
24	.0911	.0817	.0659	54	.0046	.0036	.0022
25	.0824	.0736	.0588	55	.0041	.0032	.0020
26	.0746	.0663	.0525	56	.0037	.0029	.0018
27	.0675	.0597	.0469	57	.0034	.0026	.0016
28	.0611	.0538	.0419	58	.0031	.0024	.0014
29	.0553	.0485	.0374	59	.0028	.0021	.0013
30	.0500	.0437	.0334	60	.0025	.0019	.0011

TABLE 17—Continued

THE PRESENT VALUE OF $1.

YEARS	15%	20%	25%
1	.8696	.8333	.8000
2	.7561	.6944	.6400
3	.6575	.5787	.5120
4	.5718	.4823	.4096
5	.4972	.4019	.3277
6	.4323	.3349	.2621
7	.3759	.2791	.2097
8	.3269	.2326	.1678
9	.2843	.1938	.1342
10	.2472	.1615	.1074
11	.2149		
12	.1869		
13	.1625		
14	.1413		
15	.1229		
16	.1069		
17	.0929		
18	.0808		
19	.0703		
20	.0611		
21	.0531		
22	.0462		
23	.0402		
24	.0349		
25	.0304		
26	.0264		
27	.0230		
28	.0200		
29	.0174		
30	.0151		

TABLE 18

PRESENT VALUE OF $1. PER ANNUM

CONSTANT INCOME PREMISE—DISCOUNTED AT INDICATED PER CENT

YEARS	6%	6½%	YEARS	6%	6½%
1	.94	.94	31	13.93	13.20
2	1.83	1.82	32	14.08	13.33
3	2.67	2.65	33	14.23	13.46
4	3.47	3.43	34	14.37	13.58
5	4.21	4.16	35	14.50	13.69
6	4.92	4.84	36	14.62	13.79
7	5.58	5.48	37	14.74	13.89
8	6.21	6.09	38	14.85	13.98
9	6.80	6.66	39	14.95	14.07
10	7.36	7.19	40	15.05	14.15
11	7.89	7.69	41	15.14	14.22
12	8.38	8.16	42	15.22	14.29
13	8.85	8.60	43	15.31	14.36
14	9.30	9.01	44	15.38	14.42
15	9.71	9.40	45	15.46	14.48
16	10.11	9.77	46	15.52	14.54
17	10.47	10.11	47	15.59	14.59
18	10.83	10.43	48	15.65	14.64
19	11.16	10.73	49	15.71	14.68
20	11.47	11.02	50	15.76	14.72
21	11.76	11.29	51	15.81	14.76
22	12.04	11.54	52	15.86	14.80
23	12.30	11.77	53	15.91	14.84
24	12.55	11.99	54	15.95	14.87
25	12.78	12.20	55	15.99	14.90
26	13.00	12.39	56	16.03	14.93
27	13.21	12.58	57	16.06	14.96
28	13.41	12.75	58	16.10	14.99
29	13.59	12.91	59	16.13	15.01
30	13.76	13.06	60	16.16	15.03

TABLE 18—Continued

PRESENT VALUE OF $1. PER ANNUM

CONSTANT INCOME PREMISE—DISCOUNTED AT INDICATED PER CENT

YEARS	7%	7½%	YEARS	7%	7½%
1	.93	.93	31	12.53	11.92
2	1.81	1.80	32	12.65	12.02
3	2.62	2.60	33	12.75	12.11
4	3.39	3.35	34	12.85	12.19
5	4.10	4.05	35	12.95	12.27
6	4.77	4.69	36	13.03	12.35
7	5.39	5.30	37	13.12	12.42
8	5.97	5.86	38	13.19	12.48
9	6.51	6.38	39	13.26	12.54
10	7.02	6.86	40	13.33	12.59
11	7.50	7.32	41	13.39	12.65
12	7.94	7.74	42	13.45	12.69
13	8.36	8.13	43	13.51	12.74
14	8.75	8.49	44	13.56	12.78
15	9.11	8.83	45	13.61	12.82
16	9.45	9.14	46	13.65	12.85
17	9.76	9.43	47	13.69	12.89
18	10.06	9.71	48	13.73	12.92
19	10.34	9.96	49	13.77	12.95
20	10.59	10.19	50	13.80	12.97
21	10.84	10.41	51	13.83	13.00
22	11.06	10.62	52	13.86	13.02
23	11.27	10.81	53	13.89	13.04
24	11.47	10.98	54	13.92	13.06
25	11.65	11.15	55	13.94	13.08
26	11.83	11.30	56	13.96	13.10
27	11.99	11.44	57	13.98	13.12
28	12.14	11.57	58	14.00	13.13
29	12.28	11.70	59	14.02	13.15
30	12.41	11.81	60	14.04	13.16

TABLE 18—Continued

PRESENT VALUE OF $1. PER ANNUM

CONSTANT INCOME PREMISE—DISCOUNTED AT INDICATED PER CENT

YEARS	8%	8½%	YEARS	8%	8½%
1	.93	.92	31	11.35	10.83
2	1.78	1.77	32	11.44	10.90
3	2.58	2.55	33	11.51	10.97
4	3.31	3.28	34	11.59	11.03
5	3.99	3.94	35	11.65	11.09
6	4.62	4.55	36	11.72	11.14
7	5.21	5.12	37	11.78	11.19
8	5.75	5.64	38	11.83	11.23
9	6.25	6.12	39	11.88	11.27
10	6.71	6.56	40	11.92	11.31
11	7.14	6.97	41	11.97	11.35
12	7.54	7.34	42	12.01	11.38
13	7.90	7.69	43	12.04	11.41
14	8.24	8.01	44	12.08	11.44
15	8.56	8.30	45	12.11	11.47
16	8.85	8.58	46	12.14	11.49
17	9.12	8.83	47	12.16	11.51
18	9.37	9.06	48	12.19	11.53
19	9.60	9.27	49	12.21	11.55
20	9.82	9.46	50	12.23	11.57
21	10.02	9.64	51	12.25	11.58
22	10.20	9.81	52	12.27	11.60
23	10.37	9.96	53	12.29	11.61
24	10.53	10.10	54	12.30	11.62
25	10.67	10.23	55	12.32	11.63
26	10.81	10.35	56	12.33	11.64
27	10.93	10.46	57	12.34	11.65
28	11.05	10.57	58	12.36	11.66
29	11.16	10.66	59	12.37	11.67
30	11.26	10.75	60	12.38	11.68

TABLE 18—Continued

PRESENT VALUE OF $1. PER ANNUM

CONSTANT INCOME PREMISE—DISCOUNTED AT INDICATED PER CENT

YEARS	9%	9½%	YEARS	9%	9½%
1	.92	.91	31	10.34	9.89
2	1.76	1.75	32	10.41	9.95
3	2.53	2.51	33	10.46	10.00
4	3.24	3.20	34	10.52	10.05
5	3.89	3.84	35	10.57	10.09
6	4.49	4.42	36	10.61	10.13
7	5.03	4.95	37	10.65	10.16
8	5.53	5.43	38	10.69	10.19
9	6.00	5.88	39	10.73	10.22
10	6.42	6.28	40	10.76	10.25
11	6.81	6.65	41	10.79	10.27
12	7.16	6.98	42	10.81	10.29
13	7.49	7.29	43	10.84	10.31
14	7.79	7.57	44	10.86	10.33
15	8.06	7.83	45	10.88	10.35
16	8.31	8.06	46	10.90	10.36
17	8.54	8.28	47	10.92	10.38
18	8.76	8.47	48	10.93	10.39
19	8.95	8.65	49	10.95	10.40
20	9.13	8.81	50	10.96	10.41
21	9.29	8.96	51	10.97	10.42
22	9.44	9.10	52	10.99	10.43
23	9.58	9.22	53	11.00	10.44
24	9.71	9.33	54	11.01	10.45
25	9.82	9.44	55	11.01	10.45
26	9.93	9.53	56	11.02	10.46
27	10.03	9.62	57	11.03	10.47
28	10.12	9.70	58	11.04	10.47
29	10.20	9.77	59	11.04	10.48
30	10.27	9.83	60	11.05	10.48

TABLE 18—Continued

PRESENT VALUE OF $1. PER ANNUM

CONSTANT INCOME PREMISE—DISCOUNTED AT INDICATED PER CENT

YEARS	10%	10½%	YEARS	10%	10½%
1	.91	.91	31	9.48	9.09
2	1.74	1.72	32	9.53	9.13
3	2.49	2.47	33	9.57	9.17
4	3.17	3.14	34	9.61	9.20
5	3.79	3.74	35	9.64	9.23
6	4.36	4.29	36	9.68	9.26
7	4.87	4.79	37	9.71	9.29
8	5.33	5.24	38	9.73	9.31
9	5.76	5.65	39	9.76	9.33
10	6.14	6.01	40	9.78	9.35
11	6.50	6.35	41	9.80	9.37
12	6.81	6.65	42	9.82	9.38
13	7.10	6.92	43	9.83	9.39
14	7.37	7.17	44	9.85	9.41
15	7.61	7.39	45	9.86	9.42
16	7.82	7.60	46	9.88	9.43
17	8.02	7.78	47	9.89	9.44
18	8.20	7.95	48	9.90	9.44
19	8.36	8.10	49	9.91	9.45
20	8.51	8.23	50	9.91	9.46
21	8.65	8.35	51	9.92	9.47
22	8.77	8.46	52	9.93	9.47
23	8.88	8.58	53	9.94	9.48
24	8.98	8.66	54	9.94	9.48
25	9.08	8.74	55	9.95	9.48
26	9.16	8.81	56	9.95	9.49
27	9.24	8.88	57	9.96	9.49
28	9.31	8.94	58	9.96	9.49
29	9.37	9.00	59	9.96	9.50
30	9.43	9.05	60	9.97	9.50

TABLE 18—Continued

PRESENT VALUE OF $1. PER ANNUM

CONSTANT INCOME PREMISE—DISCOUNTED AT INDICATED PER CENT

YEARS	11%	12%	15%	YEARS	11%	12%	15%
1	.90	.89	.87	31	8.73	8.09	6.58
2	1.71	1.69	1.63	32	8.77	8.11	6.59
3	2.44	2.40	2.28	33	8.80	8.14	6.60
4	3.10	3.04	2.86	34	8.83	8.16	6.61
5	3.70	3.60	3.35	35	8.86	8.18	6.62
6	4.23	4.11	3.78	36	8.88	8.19	6.62
7	4.71	4.56	4.16	37	8.90	8.21	6.63
8	5.15	4.97	4.49	38	8.92	8.22	6.63
9	5.54	5.33	4.77	39	8.94	8.23	6.64
10	5.89	5.65	5.02	40	8.95	8.24	6.64
11	6.21	5.94	5.23	41	8.96	8.25	6.65
12	6.49	6.19	5.42	42	8.98	8.26	6.65
13	6.75	6.42	5.58	43	8.99	8.27	6.65
14	6.98	6.63	5.72	44	9.00	8.28	6.65
15	7.19	6.81	5.85	45	9.01	8.28	6.65
16	7.38	5.97	6.95	46	9.02	8.29	6.66
17	7.55	7.12	6.05	47	9.02	8.29	6.66
18	7.70	7.25	6.13	48	9.03	8.30	6.66
19	7.84	7.37	6.20	49	9.04	8.30	6.66
20	7.96	7.47	6.26	50	9.04	8.30	6.66
21	8.08	7.56	6.31	51	9.05	8.31	
22	8.18	7.64	6.36	52	9.05	8.31	
23	8.27	7.72	6.40	53	9.05	8.31	
24	8.35	7.78	6.43	54	9.06	8.32	
25	8.42	7.84	6.46	55	9.06	8.32	
26	8.49	7.90	6.49	56	9.06	8.32	
27	8.55	7.94	6.51	57	9.07	8.32	
28	8.60	7.98	6.53	58	9.07	8.32	
29	8.65	8.02	6.55	59	9.07	8.32	
30	8.69	8.06	6.57	60	9.07	8.32	

Appendix E

AN EQUITY RATE SUITABLE FOR ASSESSMENT VALUATIONS

An equity rate is the rate of return an investor earns by the investment of his own funds in a project partially financed by a mortgage or some other type of debt financing. The equity rate is of interest to those assessors who, because of insufficient sales, wish to determine a yield rate by means of the band of investment technique.

On the surface this technique appears straightforward so long as the real estate market is sufficiently active to provide adequate data. There should not be much difficulty in ascertaining the typical purchase agreement, nor should the discovery of the rates of return applicable to mortgages be any problem. However, when the assessor attempts to determine the rate of return that should be applied to the down payment, i.e. the equity rate, his procedure is not so apparent.

The procedures for developing an equity rate outlined by appraisal text books are not appropriate for assessors. As the term is used by an appraiser, the equity rate is synonymous with an effective rate of return. The effective rate of return is the net income received by an investor after he has serviced the debt from the total income, expressed as a percentage of his personal investment. This concept of the equity rate is quite reasonable and is widely accepted in all fields of investment.

The Unsuitability of the Equity Rate Developed by Appraisers

The equity rate developed by appraisers relates to particular properties. It indicates to the investor what income he will receive provided certain assumptions are made. Among the more common of these assumptions are: the price paid for the property; the annual income derived from the property; the period of time he will retain ownership; the mortgage financing he can obtain and, less frequently, the amount of capital gain he can expect to make when he sells the property.

Thus, the effective rate of return, unlike the mortgage interest rate, is more a function of particular circumstances surrounding an individual property and/or investor, than it is the result of general market conditions. Moreover, it is unstable. Any change in the annual income will, in most instances, have a significant effect on the residual income and thus on the equity rate. Even without changes in annual income, the equity rate will decline annually in line with increase in equity that results from repayments of principal included in the debt charges.

It should be clear that simply because the effective rate of return on property A was 8% (or 15% or 30%), there are no *a priori* grounds for anticipating an effective rate of return of 8% (or 15% or 30%) on any other property.

Since an equity rate developed in the manner suggested by appraisers is not subject to generalization, it precludes the use of yield rates based on the band of investment technique for assessment valuation. The rationale of this technique for assessment purposes is that the yield rate calculated from a few sample transactions can be applied generally. While this holds true for mortgages, where it can be assumed that the mortgage terms obtained from a sample of investors are indicative of the terms received by all investors in comparable properties, an equity rate, when considered as an effective rate of return, does not have sufficient stability to warrant general application.

An Equity Rate for Assessors

The assessor requires an equity rate that can be incorporated into a yield rate applicable to all properties of a particular classification. Such a yield rate must be independent of the market value, the annual income, the ownership and the mortgage liability of any particular property within that classification. An equity rate developed by the procedures suggested by appraisal theorists has none of these characteristics.

Since the equity rate used by appraisers is inappropriate for assessment valuations, some other procedure must be used or the band of investment technique for developing a yield rate must be discarded. If the real estate market does not provide sufficient information for developing an equity rate, it must be developed from

some other field of investment. The summation technique for determining a yield rate provides a precedent for such a procedure.

The most reasonable source of data appears to be the market for corporate securities. The rate of return on those securities that are purchased in order to obtain a steady income rather than a capital gain provides an estimate of at least the minimum equity rate for real property investment.

The rate of return on such securities constitutes a minimum rate of return because it does not take into account the additional risk and lack of liquidity associated with investments in real estate. These factors, however, may be reflected to some extent by the differential between mortgage interest rates and the return on other types of debt financing such as corporate bonds, government bonds or municipal debentures. The ratio of equity to debt financing in real estate will presumably also be influenced by considerations of risk, illiquidity and so on.